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PERFORMANCE APPRAISAL OF MUTUAL FUNDS: A STUDY OF SELECTED MUTUAL FUNDS IN INDIA

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1. Introduction

The expansion of India's financial sector, driven by globalisation, economic liberalisation, and financial reforms, has boosted household savings rates. Investors, spurred by the growth of the capital market, are increasingly turning to equity investments. However, the associated risks and lack of information led to the rise of mutual funds as a modern investment technique, offering diversification and professional management at lower costs. Mutual funds have become popular among small and medium-sized investors seeking indirect access to the stock market.

A mutual fund is a special type of investment institution that acts as an investment conduit. It pools the savings, particularly of the relatively small investors, and invests them in a well-diversified portfolio of equities, bonds, government securities and money market instruments.

Mutual funds play a pivotal role in mobilising resources and allocating them efficiently. Internationally, they have played a key role in financial intermediation, the development of capital markets, and the growth of the corporate sector. At the end of 2022, the total value of equity and debt securities in worldwide capital markets amounted to $233.3 trillion. Regulated funds accounted for 26 percent of this total, equivalent to $60.1 trillion (Investment Company Institute (2022)).

Since their introduction in 1964, with an initial investment of ₹ 25 crore, mutual funds have experienced significant growth, reaching ₹ 37,56,683 crore in assets under management by 2022. In today's turbulent market environment, Mutual funds are viewed as transparent and affordable investment vehicles, which draws a good amount of investor interest and supports the industry's expansion.

Mutual Funds have developed into a key tool for mobilising funds, particularly from small and household savers for capital market investment. The Indian government's efforts to liberalise, privatise, and globalise the country's economy made it possible for domestic and foreign companies to enter this market. As a result, the mutual fund industry has grown to be quite competitive today.

The growth demonstrated by the mutual funds industry has led to the development of a large body of literature on portfolio management that specializes in mutual fund performance.

Particularly the value of active management has been a source of debate for decades. Numerous academic studies since the 1960s in the US and other countries have found that mutual funds generally do not outperform their benchmarks consistently. Treynor (1965), Jensen (1968), Sharpe (1966), Malkiel (1995), Gruber (1996), Davis (2001) conclude that the net performance of mutual funds (after expenses) is inferior to that of a comparable passive market proxy. However, a vast literature contradicts this view. A study by Ippolito (1989), documented significantly positive performance of US mutual funds when compared to Standard and Poor's 500 Index (S & P 500). Though extensive research literature is available on performance of Mutual Funds, no consensus has emerged in this regard so far. Although some controversy still exists, the majority of studies in western countries now conclude that actively managed funds, on an average, underperform their passively managed counterparts. (Wermer, 2000).

Actively managed funds also entail higher expense ratio and substantially higher trading costs than index funds. Given the magnitude of these costs, it is important to determine whether the industry as a whole or perhaps industry subgroups have the ability to add value to the portfolio, they manage that justify the trading costs it incurs and the management fees and expenses that it charges.

Performance evaluation of investments is a major concern for investors, particularly when they have to spend their hard-earned money on fees for professional fund management services. Keeping in view investor's interest, it is essential to appraise the performance of mutual fund managers continuously.

The objective of this study is to evaluate the financial performance of open-ended equity mutual funds in India over a ten-year period from April 2012 to March 2022. This study provides evidence on the performance of professionally managed investment portfolios in the Indian Context. The study contributes to the existing research by providing investors with insights into the historical performance of funds and their potential for future returns. Additionally, the study compares the performance of equity funds with market benchmarks to determine whether active management leads to outperformance. The success of mutual funds in mobilizing investor savings for industrial growth hinges largely on their financial performance. Key to this performance is the management of resources for profitability, encompassing rates of return, adequacy of profits, risk management, portfolio diversification, selection of securities by fund managers, and the timing of buying and selling of securities.

This study aims to address these crucial aspects of financial management within the realm of equity mutual funds operating in India.

2.Review of Literature

The evaluation of mutual fund performance has been a widely discussed subject in the area of finance, both in India and globally. A lot of literature exists, questioning whether mutual funds truly outperform market benchmarks. The pioneer in emphasising the importance of portfolio construction and evaluation was Harry Markowitz. Markowitz work paved the way for extensive research on the relationship between risk and return. His followers, including Sharpe, Treynor, Jensen, and Fama, further developed and perfected methods and measures that are still considered groundbreaking.

The evaluation of mutual fund performance began in the 1950s and 1960s with tools introduced by Markowitz, Sharpe, and others. This sparked a wave of articles, particularly in Western countries, mostly relying on U.S. data. Research in this area has focused on various aspects, including Risk adjusted performance, persistence of performance, market timing and stock selection abilities of fund managers.

The current study aims to analyse the performance of mutual funds in India from April 2012 to March 2022. Review of literature presented in this study is a brief description of research work conducted on mutual funds in India and abroad. A brief view of around 75 studies from abroad and 80 Indian studies carried out till 2023 are described in brief in this study. The reviews of the presented studies have briefly looked at performance, stock selection and market timing ability of Mutual funds.

Literature review on Performance Evaluation of the Mutual funds

Table 1: Summary of Review on Financial Literacy

Sl. No.	Author(s)	Year	Major Findings
1	Friend et al.	1962	Based on a study on U.S. mutual funds, found that while fund returns slightly trailed a composite benchmark, there was no evidence of widespread inefficiencies in the industry.
2	Treynor	1965	Introduced the Treynor Measure, which evaluates investment fund performance by considering the compensation provided to investors for the risks they undertake, highlighting the inadequacy of relying solely on return as a performance measure.

3	Sharpe	1966	Developed a comprehensive metric considering both return and risk, revealing that funds with lower expenses tended to perform better, aligning with Efficient Market theory.
4	Treynor and Mazuy	1966	Introduced a model to assess market timing skills of fund managers, testing it on 57 funds from 1953 to 1962. Only one fund demonstrated significant timing skill, suggesting most managers couldn't predict market moves.
5	Jensen	1967	Introduced a risk-adjusted measure of portfolio performance, finding minimal evidence of mutual funds outperforming a buy-and-hold strategy, setting a benchmark for subsequent evaluations that show mutual fund returns lag behind risk-adjusted index portfolios.
6	Fama	1972	Pioneered a method for evaluating managed portfolio performance by breaking it down into distinct components, emphasizing the contributions of security selection and risk-bearing to overall portfolio returns while providing detailed divisions of both "Selectivity" and "Risk".
7	Kon	1983	Introduced an empirical method for evaluating market-timing proficiency by investigating the stationarity of systematic risk in 37 funds from 1960 to 1976, revealing that while certain funds displayed superior timing skills and performance, mutual funds as a whole did not achieve satisfactory results.
8	Henriksson	1984	Study results revealed that merely 3 out of the 116 funds demonstrated statistically significant positive market timing capabilities.
9	Chang and Lewellen	1984	conducted a study examining the market timing and stock selection of mutual funds and discovered limited evidence supporting their presence.
10	Musa Essayyad and H.K. Wu	1988	Found that U.S.-incorporated international mutual funds, on the whole, surpassed the U.S. market in terms of returns and risk, underlining the substantial diversification benefits they offered to U.S. investors.

11	Grinblatt and Titman	1988	examined the abnormal returns of active investment strategies, accounting for transaction costs, fees, and expenses, revealing that while some funds demonstrated significantly positive risk-adjusted gross returns, their high expenses negated any abnormal performance in net returns, suggesting that investors could not benefit from the superior skills of these portfolio managers through purchasing shares in their mutual funds.
12	Lee, C.F. and Rahman, S.	1990	Suggested in their analysis that at the individual fund level, fund managers demonstrate some evidence of superior micro- and macro-forecasting skills.
13	Carl R. Chen, Chen F. Lee, Shafiqur Rahman, and Anthony Chan	1992	Utilized a quadratic market model and a systematically varying parameter regression method to evaluate mutual funds' security selection and market timing abilities, indicating an overall deficiency in market timing ability and suggesting a trade-off between market timing and security selection prowess.
14	Chen and Jang	1994	Found in their study that numerous funds outperformed the U.S. market benchmark, potentially attributed to improved diversification opportunities, with weaker selectivity skills observed when a global market index served as the benchmark, yet substantial evidence indicated some managers heavily relied on timing skills in international capital markets.
15	Ferson and Warther	1996	Applied conditional performance evaluation to 63 mutual funds, adjusting traditional measures with market indicators, which improved performance assessment by centering alphas near zero and eliminating evidence of perverse market timing, emphasizing the importance of incorporating public information variables in investment analysis.
16	Zakri Y. Bello and Vahan Janjigian	1997	Utilized an enhanced version of the Treynor–Mazuy (TM) model, which showed significant and positive market-timing abilities, diverging from the original TM model's results.

17	Jayadev M	1998	Found that while many Indian mutual fund schemes showed a linear relationship between return and risk, discrepancies in achieving stated objectives were evident, with several funds outperforming the benchmark in total and systematic risk, yet struggling with selectivity and diversification, as indicated by Fama's measures.
18	Kao, G. W., Cheng, L. T., & Chan, K. C.	1998	Study results indicate that these managers demonstrate strong selectivity and overall performance but show weak evidence of poor market-timing ability.
19	Ramesh Chander	2000	Study revealed that most sampled mutual funds outperformed benchmark portfolios, with open-end funds surpassing closed-end ones in returns.
20	Goetzmann, Ingersoll, and Ivkovic	2000	emphasized that, despite the more frequent market exposure decisions, monthly frequency might not accurately capture a manager's timing impact on fund results. Only a small percentage of funds exhibited statistically significant timing skill.
21	Bollen and Busse	2001	Examined persistence of market timing ability in 229 mutual funds using the TM and HM models, and investigating it through serial correlation tests, finding statistically significant persistence.
22	Roy, B., & Deb, S. S.	2003	Study findings indicated that incorporating conditioning lagged information variables enhances the performance of mutual fund schemes, leading to a shift in alphas towards the right and a reduction in the occurrence of negative timing coefficients.
23	Soumya Guha Deb	2008	Study results indicated that, generally, managers of Indian equity mutual funds have struggled to surpass their respective style benchmarks in terms of performance.
24	Sondhi and Jain	2010	Found that category, size and ownership pattern were significant determinant of performance of the sample equity mutual funds in terms of market risks and monthly returns. Monthly returns earned by the open-ended funds had outperformed the monthly returns of close ended funds for the same period with wide margin.
25	Manzoor Ahmad & Udayan Samajpati	2010	Observed that overall performance outcomes are more favorable with high-frequency data compared to monthly or annual returns.

26	Sweta Goel, Rahul Sharma, and Mukta Mani	2012	Investigated the performance of open-ended mutual funds, finding that lower expense ratios correlated with improved risk-adjusted returns, indicating that higher expenses did not yield higher returns, while larger asset sizes positively influenced performance, suggesting economies of scale.
27	Rakesh Kumar	2012	Found the market timing strategies of managers of Indian equity mutual funds were generally unsuccessful, both in capitalizing on up markets and navigating down markets.
28	Bodla S.S	2012	Found that the majority of equity fund managers in India demonstrate limited success in market timing but exhibit some reliance on stock selection.
29	Lakshmi and Bijan Roy	2013	Study suggests challenges for fund managers in consistently outperforming the market.
30	Zabiulla W	2014	Analyzed 220 Indian equity funds' portfolio strategies using the Treynor and Mazuy model and Henriksson and Merton model, finding that most managers didn't demonstrate superior performance, highlighting stock selection's importance over timing, with negative correlations between stock selection and market timing.
31	Rajesh Mishra & Vishal Ahuja	2016	Found that While some funds demonstrated selectivity skills, there was consistent evidence of a lack of market timing skills across all periods.
32	Dhanraj Sharma	2016	Concludes from their study that Indian AMCs did not demonstrate market timing abilities to enhance fund value during the specified period.
33	Subrata Roy	2017	Found a significant enhancement in market-timing performance when incorporating public information in the conditional model compared to the unconditional model.
34	El Ammari, A., Vidal, M., & Vidal-García, J.	2023	Study highlighted the increased significance of results with daily returns, emphasizing the potential advantage some fund managers demonstrate in exploiting market predictability.

Financial economics literature extensively examines mutual fund performance, covering risk, predictability, persistence, stock selection, and market timing. Initially, studies evaluated overall fund performance using measures like Jensen's Alpha and ratios such as Sharpe and

Treynor ratios. Later, the focus shifted to manager performance, incorporating stock selection and timing abilities modelled by Treynor and Mazuy and Henriksson and Merton. Despite advancements, consensus suggests sustained superior performance is challenging, supporting the efficient market hypothesis. Studies indicate limited success in market timing, while stock selection skills remain significant for achieving superior performance. Despite advancements in evaluation techniques and the introduction of new measures, consensus suggests that while some funds may outperform benchmarks in the short term, sustained superior performance is challenging to achieve, supporting the efficient market hypothesis.

2.1 Research Gap

Research in the field of mutual fund performance has extensively explored various aspects such as excess returns, risk-adjusted performance, and the influence of factors like expenses, fund size, and manager skill. However, there is a limited number of studies that have endeavoured to analyse the performance of various equity fund categories, especially within the SEBI categorization framework. The SEBI categorization framework was introduced to bring clarity and standardization in the mutual fund industry. While existing literature discusses performance metrics and benchmarks for equity funds, there is limited analysis on how these metrics vary across SEBI-defined categories and whether certain categories consistently outperform others. Answering these questions would provide valuable insights for both investors and fund managers.

Additionally, the time horizon of investment is a critical consideration for investors. While studies in the USA have analysed fund performance over longer periods ranging from nine to 25 years, research in India predominantly focuses on short-term performance. Equity mutual fund performance is more accurately assessed through analysis over a prolonged duration. Hence, there is a need for investigations that analyse the performance of Indian equity mutual funds over more extended periods, providing valuable insights for investors with different investment horizons.

Moreover, previous research has often focused on a limited set of metrics for performance analysis. However, for a more comprehensive understanding, it is essential to consider all significant parameters. Thus, this study aims to integrate key performance metrics including return, risk, risk-adjusted return, as well as stock selection and market timing ability. This approach facilitates a thorough and comprehensive analysis of selected equity mutual funds, allowing for comparisons across different equity categories and an overall assessment of Indian equity fund's performance.

The evaluation of stock selection and market timing ability among fund managers has been predominantly conducted using traditional unconditional models. Across numerous studies, including those mentioned above, there appears to be a consensus regarding the absence of significant market timing ability among mutual fund managers worldwide. However, a notable departure from this approach was proposed by Ferson and Schadt (1996), who introduced the conditional approach to measuring market timing and stock selection ability. Subsequent works by Ferson and Warther (1996), Christopherson, Ferson, and Turner (1999), Gregoriou (2003), among others, further tested and validated this conditional approach, suggesting its efficacy in identifying true market timing and stock selection abilities. Despite the recognition of the superiority of the conditional approach in various global contexts, there remains a notable research gap in the Indian context. Few studies in India have utilised the conditional approach to assess the market timing and stock selection abilities of fund managers. Therefore, this study aims to bridge this gap by employing both unconditional and conditional models to comprehensively evaluate the capabilities of Indian equity mutual fund managers.

This research gap identified in this study highlights the need for a more comprehensive analysis of equity mutual fund performance, incorporating key metrics such as return, risk, risk-adjusted return, stock selection, and market timing ability. Therefore, this study endeavours to address this gap by conducting a thorough evaluation of the financial performance of equity mutual funds in India from April 2012 to March 2022. By considering these critical parameters, the study aims to provide insights into long-term performance trends and category-specific variations within the Indian mutual fund industry, contributing to a deeper understanding of fund performance dynamics.

3. Need of the Study

Mutual funds play a crucial role in the economy by mobilising savings and investing in capital markets, impacting both short and long-term financial landscapes. They provide small investors with diversified0 portfolios and professional management, offering lower risk and higher returns. As a popular investment option in India, analysing mutual fund performance becomes essential for informed investment decisions. The mushrooming growth of asset management companies and new schemes complicates investor choices, highlighting the need for evaluating scheme performance to meet investor aspirations.

Equity mutual funds in India have gained significant traction, attracted a large number of investors and witnessed substantial inflows. Given the diverse nature of India's equity market and its inherent volatility influenced by economic, political, and global factors, a meticulous analysis of mutual fund performance is crucial. This study focuses exclusively on equity mutual funds in India and emphasises the importance of benchmark and peer comparisons to accurately gauge relative performance. By conducting a comparative analysis across different equity fund categories, investors can gain insights into strengths, weaknesses, and investment outcomes tailored to their risk tolerance and financial goals. Such evaluations enhance transparency and aid in making well-informed investment decisions. Additionally, this study offers insights into industry trends and patterns, helping stakeholders make strategic decisions. Analysing data from the past decade (April 2012 to March 2022) the study aims to provide a comprehensive evaluation of the Indian mutual fund industry, providing valuable insights to investors, financial professionals, and regulatory authorities.

4. Statement of the Problem and Research Questions

The unifying concept in the literature on financial economics is market efficiency. A highly efficient capital market incorporates all available information, offering impartial evaluations of underlying stocks. This, in turn, eliminates the potential for realising abnormal profits under conditions of certainty. According to the efficient market hypothesis, active investment management is useless. Instead, an investor would be better off using a market index alternative as part of a passive investment plan. However, the presence of a sizable mutual fund industry illustrates a belief to the contrary. It implies that a proactive investment approach might beat the market. The value of active management in Mutual Funds has long been debated, with a majority of studies, particularly in the U.S., concluding that actively managed portfolios generally underperform market indices after accounting for expenses.

Foundational research by Jensen (1968) and Sharpe (1966) demonstrated that Mutual Funds often fail to outperform passive market proxies due to the costs they incur. Most of the available literature, including studies by Friend et al. (1962), Sharpe (1966), Jensen (1968), Irwin (1965), Guy (1978), Friend and Vickerts (1965), Crumby and Glen (1990), Malkiel (1995, 2003), Gruber (1996), Blake and Tinnermann (1998), Cai et al. (1997), Quigley and Sinquefield (2000), and Pinnuck, M. (2003), Soumya Guha Deb (2008), Muhammad Asad Ali et al. (2021) concludes that the net performance of mutual funds (after expenses) is typically inferior to that of comparable passive market proxies. Although some studies, such as those by Carlson (1970), Arditti (1971), Guptha (1974), Ippolito (1989), Wermers (1997),

Chen et al. (2000), Ramesh Chander (2000), Avramov and Wermers (2006), Alexander, G. J., et al. (2007) and Aman Srivastava et al. (2010), suggested that superior performance might exist, the prevailing consensus remains that actively managed funds generally underperform their passive counterparts.

The idea behind the performance review of a mutual fund portfolio is to compare the returns realised by the portfolio (or mutual fund scheme) under the active management of the investment manager with the returns realised by the client investor had one or more suitable alternative portfolios been selected for investment. Benchmark portfolios are the terms commonly used to describe such portfolios intended for comparison. Many such random portfolios can be used. A stock market index can be chosen as a benchmark market portfolio.

A comparison of fund performance to the benchmark portfolio would reveal whether or not professional investors, security analysts, and mutual fund managers possess valuable information to generate superior returns. This hypothesis has been investigated in a number of research on mutual fund performance in the US. Present Study provides empirical evidence in the Indian context.

The superior performance of mutual funds relative to their benchmarks is often attributed to the active management skills of fund managers, particularly their abilities in market timing and stock selection. Despite the crucial role these skills play in fund management, their effectiveness has been widely debated and analysed in financial literature. Research indicates a general lack of significant market timing skills among fund managers, with many studies even suggesting the presence of negative and perverse market timing, where managers' attempts to time the market are counterproductive. However, some evidence points to superior stock selection abilities, though this is not universal. In India, similar trends are observed, with most studies finding little evidence of successful market timing by fund managers, though stock selection abilities appear to be more prominent. Given this backdrop, there is a need to further explore and understand the extent to which market timing and stock selection abilities contribute to the superior performance of Mutual Funds. This investigation is crucial for assessing the true value of active management and the skills of fund managers, particularly in the context of developing markets like India, where evidence remains inconclusive.

Research Questions

In the present study the performance of mutual fund schemes is assessed in the context of risk and return in order to answer the following research questions.

RQ 1: How has the Mutual Fund business grown and developed in India over time?

RQ 2: Is Mutual Fund performance superior to market benchmark?

RQ 3: How do the risk-return parameters vary among different categories of equity funds?

RQ 4: Do investors receive the benefits of diversification through Mutual Funds?

RQ 5: How do equity mutual fund schemes perform in terms of risk-adjusted returns?

RQ 6: Do mutual fund managers possess the skills necessary for effective stock selection, and how does their stock selection skill vary across different categories of equity funds?

RQ 7: Do mutual fund managers possess the skills necessary for effective Market Timing, and how does their Market Timing skill vary across different categories of equity funds?

5. Objectives of the Study

The purpose of the current study is to gather the pertinent data regarding the performance of a selected number of Indian mutual fund schemes in order to provide investors and fund managers with useful information. The study has the following basic objectives.

1) To examine the growth and development of Mutual Fund business in India.
2) To assess the financial performance of equity Mutual Fund schemes in terms of rate of return earned and to assess return of fund relative to market return and risk-free return.
3) To assess the total risk and systematic risk of equity Mutual Fund schemes.
4) To assess how effectively the equity funds has diversified its portfolio to minimise risk and maximise returns.
5) To assess the financial performance of equity Mutual Funds schemes in terms of risk-adjusted returns.
6) To have a comparative assessment of the risk-return profiles of different equity fund categories and identify their relative strengths and weaknesses.
7) To investigate the stock selection skills of Indian mutual fund managers and perform a comparative analysis stock selection skill across different equity scheme categories.
8) To investigate the Market Timing skill of Indian mutual fund managers and perform a comparative analysis of Market Timing skill across different equity scheme categories.

6. Research Hypothesis

For the purpose of evaluating the performance of different categories of equity mutual funds the following hypotheses are tested.

Hypothesis 1: There is a significant difference between the sample fund return and the benchmark index return.

The test was performed on the return series of the market indices and the sample funds. The significant difference between the sample fund returns and the index return is examined using the paired sample 't' test to support this hypothesis.

Hypothesis 2: There is a significant difference between the variability of the fund return and the variability of the index return.

The standard deviation, which aids in measuring the variability of fund return, is used to test this hypothesis. Risks that are both systematic and random are included in the return variability. The paired sample 't' test is used to determine whether there is a significant difference between the average variability of a sample Mutual Fund return and the average variability of an index return in order to demonstrate the aforementioned hypothesis.

Hypothesis 3: There is a significant difference between the Sharpe ratio of sample Mutual Funds and their benchmark indices.

The significant difference between the Sharpe ratio of sample fund return and the index return is examined using the paired sample 't' test to support this hypothesis.

Hypothesis 4: There is a significant difference between the Treynor ratio of sample Mutual Funds and their benchmark indices.

The significant difference between the Treynor ratio of sample fund return and the index return is examined using the paired sample 't' test to support this hypothesis.

Comparison across Fund Category

Hypothesis 5:

There is a significant difference in the return of selected equity Mutual Fund schemes across fund characteristics.

ANOVA, a mean-based statistical test designed to determine the significance of differences in the returns across the various Mutual Fund categories, is used to demonstrate the aforementioned claim.

Hypothesis 6:

There is a significant difference in the variability of returns of selected equity Mutual Fund schemes across fund characteristics.

ANOVA, is used to demonstrate the aforementioned claim.

Hypothesis 7:

There is a significant difference in the Sharpe Ratio of selected equity Mutual Fund Schemes across fund characteristics. ANOVA, is used to demonstrate the aforementioned claim.

Hypothesis 8:

There is a significant difference in the Treynor Ratio of selected equity Mutual Funds schemes across fund characteristics. ANOVA, is used to demonstrate the aforementioned claim.

Hypothesis 9

Equity mutual fund managers are successful at stock selection.

Jensen alpha and Treynor-Mazuy and Henriksson-Merton conditional and unconditional Model is used for analysing the stock picking ability of fund managers. The evidence for superior performance can be seen from the value of alpha intercept and the corresponding t-statistic.

Stock Selection Skill

Scheme wise performance

Alpha is not significantly different from zero

$H_0: \alpha_1 = \alpha_2 = \alpha_3 = \ldots\ldots\ldots \alpha_{125}=0$

Alpha is significantly different from zero

$H_A: \alpha \neq 0$

Hypothesis 10

Equity mutual fund managers are successful at market timing.

Treynor -Mazuy and Henriksson-Merton conditional and unconditional Model is used to assess the Market timing skill of fund managers.

Scheme wise performance

Gamma value is not significantly different from zero

$H_0: \gamma_1 = \gamma_2 = \gamma_3 = \ldots\ldots \gamma_{125} = 0$

Gamma value is significantly different from zero

$H_A: \gamma \neq 0$

7. Research Methodology

The research methodology used in this study to assess the financial performance of equity mutual funds has been outlined below.

7.1 Type of Research

The study is analytical and quantitative in nature. In analytical research, already known facts or information are used and evaluated to provide a critical assessment of the subject matter and to draw fresh insights or conclusions. It often entails a thorough analysis and evaluation of the data and information already available to spot trends, themes, and relationships. Additionally, this research study is quantitative in character. To reach relevant conclusions, quantitative secondary data is evaluated. Factors such as investment strategy and management style are qualitative, but the fund's past performance record is an important indicator too. Though past performance alone cannot be indicative of future performance, it is, frankly, the only quantitative way to judge how good a fund is at present.

7.2 Scope of the Study

Selection of Schemes and Data Description

The study focuses on 125 equity diversified open-ended mutual fund schemes in India from April 2012 to March 2022, drawn from 11 different categories based on SEBI's Categorisation of the mutual fund schemes (SEBI, 2017). These schemes, all regular plans with growth options, represent over 95% of the total Mutual Funds AUM in India. The sample of 125 schemes has been drawn from the population of Indian equity diversified mutual fund schemes which invest in a variety of equity financial assets and which are not sector specific.

Only active equity diversified schemes were considered for their relevance in stock selection and market timing. The criteria for selecting a sample of 125 equity schemes for the study is the launch date of the schemes. The sample was chosen based on schemes launched before April 2012 with continuous 10-year data availability. In India, the SEBI in January 2013 made it mandatory for the AMCs to also offer their mutual fund schemes to investors under the Direct Plan (SEBI Annual Report, 2012-13, n.d.). Including only the regular plan of

mutual funds in our sample allowed us to have an analysis of fund performance over a longer time frame of 10 years from April 2012 to March 2022.

It was desirable to have sample data, which is representative of the 'universe' in order to have reliability and credibility in the findings of the study. Schemes belonging to different categories as per SEBI categorisation is included in the sample. First the list of open-ended Regular schemes with growth options from different categories belonging to different fund houses (One for each fund house) was prepared. Total number of such schemes was found to be 246. From this list, schemes launched after 1st April 2012 were excluded. This reduced the number of schemes to 125. Sample of 125 open ended -regular equity schemes represents more than one-half (50.18%) of the universe of open ended regular equity schemes as at the end of March 2022. Daily Net Asset Values of the funds were used in the analysis.

Benchmark

The performance of each category of equity mutual funds included in the sample has been compared with the performance of the funds' respective benchmark indices over the period April 2012 to March 2022. NSE Total return index is used as a benchmark. Total return index reflects the returns on the index arising from (a) constituent stock price movements and (b) dividend receipts from constituent index stocks. From February 2018 all the mutual funds have been mandated to use Total return index as the new benchmark. Data on the NSE Total return index is collected from the NSE website.

Risk-Free Asset Surrogate

In this study, 91 days Treasury Bills (T-Bills) are used as a surrogate for risk free asset. The information on its yields is easily available.

The T-Bills has been chosen as a risk-free asset because:

- It is a gilt-edged security and carries no risk of default;
- It carries statutory back up;
- It possesses minimum volatility compared to other risk-free assets.

Data on 91-day Treasury bills is collected from the RBI website.

Equity Funds and the Benchmark

In the equity group a total of 125 actively managed equity funds belonging to the following eleven categories were included in the analysis:

Table 3.1: Category of Equity Funds and Benchmark

Equity Funds	No. of Schemes	Benchmark
Equity Large-Cap	21	NIFTY 100 Total Return Index
Equity-Large & MidCap	15	NIFTY Large Midcap 250 Total Return Index
Equity MultiCap	5	Nifty 500 Multicap 50:25:25 Total Return Index
Equity-MidCap	15	NIFTY Midcap 150 Total Return Index
Equity-SmallCap	9	NIFTY Smallcap 250 Total Return Index
Equity-Value	8	Nifty 500 Value 50 Total Return Index
Equity-ELSS	21	NIFTY 500 Total Return Index
Equity-Contra	3	Nifty 500 Value 50 Total Return Index
Equity-Dividend Yield	3	NIFTY 500 Total Return Index
Equity-Focus	10	NIFTY 500 Total Return Index
Equity-FlexiCap	15	NIFTY 500 Total Return Index
	125	

Table 3.2: Description of Sample Mutual Fund Schemes

	Scheme Name	Scheme Category	Launch Date
1	Aditya Birla Sun Life Frontline Equity Fund	Equity Scheme - Large Cap Fund	23-Sep-02
2	Axis Bluechip Fund	Equity Scheme - Large Cap Fund	11-Nov-09
3	Canara Robeco Bluechip Equity Fund	Equity Scheme - Large Cap Fund	28-Jun-10
4	DSP Top 100 Equity Fund	Equity Scheme - Large Cap Fund	10-Feb-03
5	Edelweiss Large Cap Fund	Equity Scheme - Large Cap Fund	04-May-09

6	Franklin India Bluechip Fund	Equity Scheme - Large Cap Fund	01-Dec-93
7	HDFC Top 100 Fund	Equity Scheme - Large Cap Fund	19-Aug-96
8	HSBC Large Cap Equity Fund	Equity Scheme - Large Cap Fund	14-Nov-02
9	ICICI Prudential Bluechip Fund	Equity Scheme - Large Cap Fund	08-Apr-08
10	IDFC LARGE CAP FUND	Equity Scheme - Large Cap Fund	19-Apr-06
11	Indiabulls Blue Chip Fund	Equity Scheme - Large Cap Fund	20-Jan-12
12	Invesco India Large Cap Fund	Equity Scheme - Large Cap Fund	10-Jul-09
13	JM Large Cap Fund.	Equity Scheme - Large Cap Fund	01-Apr-95
14	Kotak Bluechip Fund	Equity Scheme - Large Cap Fund	22-Dec-98
15	LIC MF Large Cap Fund	Equity Scheme - Large Cap Fund	01-Sep-94
16	Mirae Asset Large Cap Fund	Equity Scheme - Large Cap Fund	11-Feb-08
17	Navi Large Cap Equity Fund	Equity Scheme - Large Cap Fund	07-Sep-11
18	Nippon India Large Cap Fund	Equity Scheme - Large Cap Fund	12-Jun-07
19	SBI BLUE CHIP FUND	Equity Scheme - Large Cap Fund	23-Dec-05
20	Taurus Largecap Equity Fund	Equity Scheme - Large Cap Fund	07-May-08
21	UTI - Mastershare Unit Scheme	Equity Scheme - Large Cap Fund	01-Feb-03
22	Aditya Birla Sun Life Equity Advantage Fund	Equity Scheme - Large & Mid Cap Fund	24-Feb-95
23	BOI AXA Large & Mid cap equity fund	Equity Scheme - Large & Mid Cap Fund	04-Sep-08
24	Canara Robeco Emerging Equities	Equity Scheme - Large & Mid Cap Fund	11-Feb-05
25	DSP Equity Opportunities Fund	Equity Scheme - Large & Mid Cap Fund	11-Mar-00
26	Franklin India Equity Advantage Fund	Equity Scheme - Large & Mid Cap Fund	17-Jan-05
27	ICICI Prudential Large & Mid Cap Fund	Equity Scheme - Large & Mid Cap	01-Jun-98
28	IDFC CORE EQUITY FUND	Equity Scheme - Large & Mid Cap	27-Jun-05
29	Invesco India Growth Opportunities Fund	Equity Scheme - Large & Mid Cap	09-Jul-07
30	Kotak Equity Opportunities Fund	Equity Scheme - Large & Mid Cap	10-Sep-04

31	Mirae Asset Emerging Bluechip fund	Equity Scheme - Large & Mid Cap	24-May-10
32	Nippon India Vision Fund	Equity Scheme - Large & Mid Cap	25-Sep-95
33	Quant Large & Mid Cap Fund	Equity Scheme - Large & Mid Cap	20-Nov-06
34	SBI Large & Midcap fund	Equity Scheme - Large & Mid Cap	01-Jan-93
35	Sundaram Large and Midcap Fund	Equity Scheme - Large & Mid Cap	10-Jan-07
36	UTI - Core Equity Fund	Equity Scheme - Large & Mid Cap	20-May-09
37	Baroda BNP Paribas Multi Cap Fund	Equity Scheme - Multi Cap Fund	14-Aug-03
38	ICICI Prudential Multicap Fund	Equity Scheme - Multi Cap Fund	01-Sep-94
39	Invesco India Multicap Fund	Equity Scheme - Multi Cap Fund	07-Jan-08
40	Nippon India Multi Cap Fund	Equity Scheme - Multi Cap Fund	14-Feb-05
41	Quant Active Fund	Equity Scheme - Multi Cap Fund	19-Feb-01
42	Aditya Birla Sun Life Midcap Fund	Equity Scheme - Mid Cap Fund	09-Sep-02
43	Axis Midcap Fund	Equity Scheme - Mid Cap Fund	31-Jan-11
44	DSP Midcap Fund	Equity Scheme - Mid Cap Fund	29-Sep-06
45	Franklin India Prima Fund	Equity Scheme - Mid Cap Fund	01-Dec-93
46	HDFC Mid-Cap Opportunities Fund	Equity Scheme - Mid Cap Fund	07-May-07
47	ICICI Prudential MidCap Fund	Equity Scheme - Multi Cap FundShifted from MultiCap Fund	06-Sep-04
48	Invesco India Midcap Fund	Equity Scheme - Mid Cap Fund	15-Feb-07
49	Kotak Emerging Equity Fund	Equity Scheme - Mid Cap Fund	12-Feb-07
50	L&T Mid Cap Fund	Equity Scheme - Mid Cap Fund	24-Jun-04
51	Nippon India Growth Fund	Equity Scheme - Mid Cap Fund	25-Sep-95
52	Quant Mid Cap Fund	Equity Scheme - Mid Cap Fund	12-Feb-01
53	SBI Magnum Midcap fund	Equity Scheme - Mid Cap Fund	21-Feb-05
54	Sundaram Mid Cap Fund	Equity Scheme - Mid Cap Fund	24-Jun-02
55	Taurus Discovery (Midcap) Fund	Equity Scheme - Mid Cap Fund	05-Sep-94
56	UTI - Mid Cap Fund	Equity Scheme - Mid Cap Fund	02-Jan-03
57	Aditya Birla Sun Life Small Cap Fund	Equity Scheme - Small Cap Fund	09-Apr-07
58	DSP Small Cap Fund	Equity Scheme - Small Cap Fund	04-May-07

59	Franklin India Smaller Companies Fund	Equity Scheme - Small Cap Fund	16-Nov-05
60	HSBC Small Cap Equity Fund	Equity Scheme - Small Cap Fund	12-Apr-05
61	ICICI Prudential Smallcap Fund	Equity Scheme - Small Cap Fund	23-Aug-07
62	Kotak Small Cap Fund	Equity Scheme - Small Cap Fund	30-Dec-04
63	Nippon India Small Cap Fund	Equity Scheme - Small Cap Fund	26-Aug-10
64	Quant Small Cap Fund	Equity Scheme - Small Cap Fund	23-Sep-96
65	Sundaram Small Cap Fund	Equity Scheme - Small Cap Fund	03-Jan-05
66	Aditya Birla Sun Life Pure Value Fund	Equity Scheme - Value Fund	17-Jan-08
67	Templeton India Value Fund	Equity Scheme - Value Fund	10-Sep-96
68	HDFC Capital Builder Value Fund	Equity Scheme - Value Fund	16-Dec-93
69	ICICI Prudential Value Discovery Fund	Equity Scheme - Value Fund	09-Jul-04
70	IDFC Sterling Value Fund	Equity Scheme - Value Fund	09-Jan-08
71	JM Value Fund	Equity Scheme - Value Fund	25-Mar-97
72	Nippon India Value Fund	Equity Scheme - Value Fund	10-May-05
73	UTI - Value Opportunities Fund	Equity Scheme - Value Fund	16-Jul-05
74	Aditya Birla Sun Life Tax Plan	Equity Scheme - ELSS	02-Feb-99
75	Axis Long Term Equity Fund	Equity Scheme - ELSS	17-Dec-09
76	BOI AXA Tax Advantage Fund	Equity Scheme - ELSS	12-Dec-08
77	Canara Robeco Equity Tax Saver Fund	Equity Scheme - ELSS	25-Feb-93
78	DSP Tax Saver Fund	Equity Scheme - ELSS	27-Nov-06
79	Edelweiss Long Term Equity Fund (Tax Savings)	Equity Scheme - ELSS	26-Dec-08
80	Franklin India Taxshield	Equity Scheme - ELSS	10-Apr-94
81	HDFC TaxSaver	Equity Scheme - ELSS	31-Mar-96
82	HSBC Tax Saver Equity Fund	Equity Scheme - ELSS	20-Nov-06
83	IDFC Tax Advantage (ELSS) Fund	Equity Scheme - ELSS	01-Dec-08
84	Invesco India Tax Plan	Equity Scheme - ELSS	20-Nov-06
85	JM Tax Gain Fund	Equity Scheme - ELSS	24-Dec-07
86	Kotak Tax Saver Fund	Equity Scheme - ELSS	29-Sep-05

87	LIC MF Tax Plan	Equity Scheme - ELSS	11-Jan-97
88	Nippon India Tax Saver (ELSS) Fund	Equity Scheme - ELSS	25-Jul-05
89	Quant Tax Plan	Equity Scheme - ELSS	08-Mar-00
90	SBI Long Term Equity Fund	Equity Scheme - ELSS	24-Feb-93
91	Sundaram Tax Savings Fund (Formerly Known as Principal Tax Savings Fund)	Equity Scheme - ELSS	01-Jan-96
92	Taurus Tax Shield	Equity Scheme - ELSS	05-Mar-07
93	Union Long Term Equity Fund	Equity Scheme - ELSS	08-Nov-11
94	UTI - Long Term Equity Fund (Tax Saving)	Equity Scheme - ELSS	15-Nov-99
95	Invesco India Contra Fund	Equity Scheme - Contra Fund	15-Feb-07
96	Kotak India EQ Contra Fund	Equity Scheme - Contra Fund	02-Jun-05
97	SBI Contra Fund	Equity Scheme - Contra Fund	06-May-05
98	Aditya Birla Sun Life Dividend Yield Fund	Equity Scheme - Dividend Yield	23-Jan-03
99	Templeton India Equity Income Fund	Equity Scheme - Dividend Yield	22-Mar-06
100	UTI - Dividend Yield Fund	Equity Scheme - Dividend Yield	11-Apr-05
101	Aditya Birla Sun Life Focused Equity Fund	Equity Scheme - Focused Fund	30-Aug-05
102	DSP Focus Fund	Equity Scheme - Focused Fund	23-Apr-10
103	Franklin India Focused Equity Fund	Equity Scheme - Focused Fund	31-May-07
104	HDFC Focused 30 Fund	Equity Scheme - Focused Fund	20-Aug-04
105	ICICI Prudential Focused Equity Fund	Equity Scheme - Focused Fund	15-Apr-09
106	IDFC Focused Equity Fund	Equity Scheme - Focused Fund	30-Jan-06
107	JM Core 11 Fund	Equity Scheme - Focused Fund	14-Jan-08
108	Nippon India Focused Equity Fund	Equity Scheme - Focused Fund	14-Nov-06
109	Quant Focused Fund	Equity Scheme - Focused Fund	03-Jul-08
110	SBI Focused Equity Fund	Equity Scheme - Focused Fund	23-Aug-04
111	Aditya Birla Sun Life Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	17-Aug-98
112	Canara Robeco Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	29-Aug-03
113	DSP Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	04-Apr-97
114	Franklin India Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	29-Sep-94

115	HDFC Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	08-Dec-94
116	HSBC Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	22-Jan-04
117	IDFC Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	05-Sep-05
118	JM Flexicap Fund	Equity Scheme - Flexi Cap Fund	31-Jul-08
119	Kotak Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	22-Jul-09
120	LIC MF Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	16-Apr-98
121	Quant Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	25-Aug-08
122	SBI Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	22-Aug-05
123	Taurus Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	29-Jan-94
124	Union Flexi Cap Fund	Equity Scheme - Flexi Cap Fund	20-May-11
125	UTI - Flexi Cap Fund.	Equity Scheme - Flexi Cap Fund	20-Apr-92

Data Sources

Present Study is based on Secondary Data collected from various sources. The important sources of data are records of AMFI from official websites of AMFI, SEBI and RBI, web sites of respective AMCs, Value Research Online, Moneycontrol.com, NSE Website. Important data was also collected from Fact Sheets, Newspapers, journals, periodicals and books etc.

Data for the Evaluation of Mutual Fund Performance

- Data on Assets under management, Net resources mobilised, Share of various schemes in AUM, Number of Schemes, Unit holding pattern, Stocks of Financial Assets of Households was obtained from Annual reports of SEBI and RBI, Handbook of Statistics from SEBI Website, RBI Bulletin, RBI Handbook of Statistics.
- Daily net asset values (NAVs) of funds (Regular plan -Growth option) obtained from the official website of the association of mutual funds in India (www.amfiindia.com).
- Total Returns Index Values (Market indices) of different types of equity indices benchmarking various categories of equity mutual funds included in the study obtained from the website of the NSE.

- 91-Day Treasury Bill rates, a proxy for the risk-free rate, is taken from the website of the RBI (Auctions of 91-Day Govt. of India Treasury Bills, Handbook of Statistics on the Indian Economy).

Period of the Study

This study analyses the performance of the Indian mutual fund industry for the period of 10 years from 1st April 2012 to 31st March 2022. As depicted in Fig 1 this period was marked by significant activity in the stock market, characterised by a prolonged bull market. The Nifty 50 Index surged from 5317.9 on April 1, 2012, to 17464.75 on March 31, 2022. This attracted not only a huge number of investors but also new asset management companies. Hence, this period was chosen for the present analysis. It is always appropriate to assess performance over longer periods to smooth out very short-term fluctuations in performance and the influence of the business cycle. This time frame of 10 years is long enough to have witnessed a range of stock market ups and downs and to generalise about mutual fund performance. Additionally, it is recent enough to provide insight into current mutual fund performance.

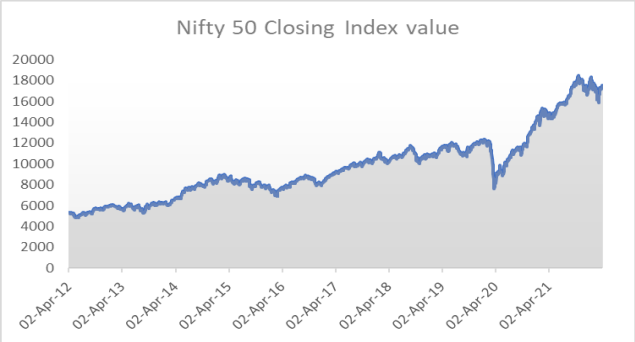

Fig 1: Nifty fifty closing index values (1st April 2012 to 31st March 2022)

7.3 Methods and Techniques of Data Analysis

This study is based on secondary data. To analyse the performance of Indian Mutual Fund Industry, the daily NAVs of selected sample schemes have been gathered for the study period 1st April 2012 to 31st March 2022.

The performance of the sample schemes is analysed by applying the following measures and methods that have been developed over the years by various researchers.

Portfolio (Fund) Returns

Daily Log returns of the mutual funds are calculated and used in the analysis. Logarithmic return, also known as continuously compounded return, is a way to measure the percentage change in the value of an investment over time. It is a widely used concept in finance, especially in the calculation of returns on investments that are held for an extended period. The logarithmic return is calculated by taking the natural logarithm of the ratio of the ending value to the beginning value of the investment, then multiplying that result by 100 to express it as a percentage.

The daily log returns are computed on the basis of the Net asset values of different schemes and returns on the market index are calculated on the basis of various index values on the respective date for the 10 years.

Fund returns are assumed to be continuously compounded and are calculated using the following equation

The log return from a mutual fund scheme (R_{pt}) at time t, is as follows

$$R_{pt} = ln(\frac{NAV_t}{NAV_{t-1}})X100 \quad \textbf{(1)}$$

where, Rpt = Portfolio (fund) returns for the period ' t' (daily)

Where NAV_t and NAV_{t-1} are daily closing net asset values for time period t and t-1 respectively.

ln (or ln) = Natural Logarithm function

The mean return of the mutual fund scheme (R_p) over a period of time is calculated using the following equation.

$$R_p = \Sigma \frac{R_{pt}}{n} \quad \textbf{(2)}$$

Where $R_{pt}$is the return from a mutual fund scheme at time t and n is the total number of time periods studied.

The log return on the market (represented by a stock index) at time t, is as follows:

$$R_{it} = ln(\frac{I_t}{I_{t-1}}) \quad \textbf{(3)}$$

Where I_t and I_{t-1} are values of a benchmark stock market index at period 't' and 't-1' respectively. The mean return of the market portfolio (R_i) over a period of time is computed using the following equation.

$$R_i = \Sigma \frac{R_{it}}{n} \quad \textbf{(4)}$$

Where, R_{it} is the return from a stock market index at time 't' and n is the total number of time periods studied.

Risk

Mutual fund's returns involve a huge degree of risk as they depend on the performance of the stock market. Hence, the Return of any fund is to be judged in the context of the implicit risk of the portfolio. Total risk can be measured by standard deviation of the return distribution. Classification of risk for portfolio is systematic and unsystematic risk. That is the two components of total risk are systematic risk and unique risk. Systematic risk can be measured by beta (**β).**

Standard Deviation (σ)

Standard deviation is a way to quantify risk. It is a statistic to measure the variation in individual returns from the average expected return over a certain period of time. Thus it is a statistical measure of dispersion in returns. The higher the standard deviation, the greater the risk.

The standard deviation is computed from logarithmic daily returns using the following formula

$$\sigma_p = [\frac{1}{n}\Sigma(R_{pt} - R_p)^2]^{\frac{1}{2}} \qquad \textbf{(5)}$$

Where σ_p is the total risk of the scheme portfolio.

The total risk of the market line portfolio is:

$$\sigma_m = [\frac{1}{n}\Sigma(R_{mt} - R_m)^2]^{\frac{1}{2}} \qquad (6)$$

Where σ_m is the total risk of the market portfolio.

Systematic risk (β) of the portfolio:

Systematic Risk (β) is that part of the total risk which is influenced by the changes in the overall market.

Beta of the Portfolio is calculated as follows:

$$B_p = \frac{Cov(R_p,R_m)}{\sigma_m^2} \qquad \textbf{(7)}$$

$Cov(R_p, R_m)$ = Covariance of the portfolio and market returns

σ_m^2 = Variance of the market return.

Diversification: Co-efficient of determination (R^2)

The basic feature of a mutual fund is the element of risk reduction through the process of diversification.

The Market or Index Model, the linear regression model is used to obtain the R^2

$$R_p = \alpha + \beta_p R_m + e_p \quad \textbf{(8)}$$

Where $'\alpha'$ is the intercept (constant term), $'\beta_p'$ is the slope of the regression (systematic risk) and 'e_p' is the error term. Portfolio diversification is typically measured by correlating the returns on the portfolio with the returns on the market index; this is accomplished as part of the process of fitting a characteristic line whereby the portfolio's returns are regressed against the market's returns. The square of the correlation coefficient produced as a part of the analysis called the coefficient of determination or R^2.

R^2 is given by the following equation

$$R^2 = \frac{Cov(R_p, R_m)}{\sigma_p \sigma_m}$$

The extent of diversification which is used to reduce the degree of unique risk is measured by R^2 of the portfolio. A low R^2value indicates that the fund has further scope for the diversification.

Risk Adjusted Returns

Since the return is associated with the risk, it is necessary to judge mutual fund's returns in terms of the associated risks. Two methods of measuring the reward per unit of risk have been proposed by William Sharpe and Jack Treynor respectively in their pioneering work on evaluation of portfolio performance.

Sharpe's reward to variability ratio

It was developed by Sharpe (1966). The Sharpe ratio is a widely recognized metric for assessing the risk-adjusted performance of investment portfolios.

It can be expressed as

$$Sharpe\ Ratio_p = \frac{R_p - R_f}{\sigma_p} \quad \textbf{(9)}$$

Where $Sharpe\ Ratio_p$ is Sharpe's ratio of the portfolio, R_p is the average return on the portfolio (managed fund), R_f is the average risk free return; and σ_p is the standard deviation of the fund returns.

The benchmark comparison is, additional return of market over risk free return related with market portfolio's total risk.

$$Sharpe\ Ratio_m = \frac{R_m - R_f}{\sigma_m} \quad \textbf{(10)}$$

Where $Sharpe\ Ratio_m$ is Sharpe's ratio of the market portfolio, R_m is the average return on the market portfolio (managed fund), R_f is the average risk free return; and σ_m is the standard deviation of the market returns.

Treynor's reward to volatility ratio

This is introduced by Treynor (1965). Here, additional returns of the portfolio over the risk-free return is expressed in relation to the portfolio's systematic risk.

Treynor's ratio is given by equation (11)

$$Treynor\ Ratio_p = \frac{R_p - R_f}{\beta_p} \quad \textbf{(11)}$$

Where $Treynor\ Ratio_p$ is Treynor Ratio of the portfolio, R_p is the average return on the portfolio, R_f is the average risk-free return and β_p is the beta of the portfolio (fund) i.e. sensitivity of fund return to market return.

The benchmark for comparison with this measure of performance is additional returns of the market over risk free return against the volatility of the overall market. But, as the volatility (beta) of the market portfolio shall always be one, the denominator is always one.

Thus, Treynor ratio of the market can be expressed as

$$Treynor\ Ratio_p = (R_m - R_f) \quad \textbf{(12)}$$

Where, Rm is average return on market portfolio (benchmark). If the $Treynor\ Ratio_p$ is greater than the benchmark (Rm-Rf) comparison, the portfolio (fund) has outperformed the market; otherwise it has not.

Evaluation of Stock Selection skills of fund manager

Jensen Measure

Jensen Measure was developed by Michael Jensen in 1968. Jensen has given a different dimension to the portfolio performance. He confined his attention to the problem of evaluating a portfolio manager's predictive ability of successfully predicting security prices which yield higher returns. A slight variation of the CAPM model was proposed by Jensen. The Jensen's alpha measure is the intercept from the Sharpe-Lintner CAPM regression of portfolio excess returns on the market portfolio excess returns over the sample period.

The basic model has been expressed as

$$R_p - R_f = \alpha_p + B_p(R_m - R_f) + \epsilon_p \quad \textbf{(13)}$$

Where

R_f = Risk free return

R_m= Return on the market portfolio

α_p = Alpha, the intercept of the regression equation. It measures the stock selection ability

ϵ_p= random error term

Jensen's stock selectivity measure is represented by an alpha parameter. A statistically significant positive value of alpha would imply superior stock selection skills of the manager, whereas a statistically significant negative alpha evidences inferior stock selection skills of the manager.

According to Jensen (1968), equilibrium return on a portfolio would be a benchmark. Equilibrium return is the return of the portfolio which is correctly priced by the market with respect to systematic risk (volatility) of the portfolio. This is the return a portfolio should earn with the given systematic risk.

$$ER_p = R_f + B_p (R_m - R_f) \quad (14)$$

ER_p is equilibrium return of the fund, Difference between equilibrium return and return of the portfolio indicates superior performance of the fund. This is called as Alpha (α).

$$\alpha_p = R_p - ER_p$$

Thus Jensen alpha is calculated by using the following equation

$$\alpha_p = R_p - [R_f + B_p (R_m - R_f)] \quad (15)$$

Where α_p is the differential return earned by the scheme out of the ability of the fund manager in selection of the securities. Thus, Jensen's measure represents the average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM)

A positive value of Alpha for a portfolio would indicate that the portfolio had an average return greater than the benchmark return (equilibrium portfolio return) indicating superior performance. The additional return earned by the fund manager over equilibrium return can be attributed to his ability to select the securities.

Fama's Break up of Return

The empirical results relating to risk-adjusted performance measures discussed earlier reflected the overall performance of sample schemes. However, it will be useful to break down the performance into different components of performance. Thus, the performance of the mutual fund schemes has also been examined on the basis of Fama's components of investment performance measure. Following the work of Treynor, Sharpe and Jensen, Fama (1972) suggested a somewhat finer breakdown of performance.

Components of Investment Performance

In terms of Fama's framework portfolio return constitutes the following four components:

a) Risk-free return Rf
b) Compensation for systematic risk β (Rm – Rf)
c) Compensation for inadequate diversification (Rm – Rf) (σp/σm –Beta)
d) Net superior returns due to selectivity

Fama's Net Selectivity : (Rm- Rf) – (σp/σm) (Rm – Rf) (16)

Following this metric, return expected by the investors of mutual funds consists of risk-free rate of return, expected additional return for assuming market risk (risk premium) and expected additional return for inadequate diversification. Excess of the actual return over the expected return of the portfolio, can be attributed to the superior stock selectivity of the portfolio manager and is known as Net Selectivity.

Stock selection and timing skills of fund managers

Two possible methods presumed to be used by fund managers for generating superior performance are identified as 'stock selection' and 'market timing'.

In this study the market timing ability of Indian Fund managers is assessed using unconditional as well as conditional Treynor-Mazuy and Henriksson-Merton Models

Unconditional Models

TREYNOR –MAZUY MODEL (TM)

Treynor and Mazuy (1966) modified the original excess return version of the linear market model by adding quadratic term in it as follows:

$$R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma\left(R_m - R_f\right)^2 + \epsilon_p \quad (17)$$

Where

R_f = Risk free return

R_m = Return on the market portfolio

ϵ_p = random error term

And α ,β, and γ are the parameters of the model. The parameters in the above model could be estimated by using standard regression methodology. In this equation 'γ' is the manager's ability to time the market movement and 'α' is the expected return for portfolio 'p' generated from the manager's selectivity skills.

The ‘α’ measures the stock-selection ability of the fund managers. An ‘α’ which is positive and significantly different from zero, would be an evidence of superior ability of the portfolio manager in selecting under-valued securities (selectivity) and vice versa.

Treynor and Mazuy argued that if the above regression is carried out with $(R_p - R_f)$ as the dependent variable, the estimated value of the parameter ‘γ’ will act as a measure of the market timing ability of the fund manager. If the fund manager is unable to time the market correctly, then the estimated value of ‘γ’ should not be significantly different from zero. Thus a statistically significant positive value of γ (Gamma coefficient of the portfolio) would imply that the mutual fund manager possesses market timing skills. A negative value for ‘γ’ is interpreted as a lack of ability of fund managers to time the market correctly.

HENRIKSSON-MERTON MODEL(HM)

Henriksson and Merton (1981) proposed a similar but simple model to test the market timing abilities of the fund manager. Treynor and mazuy (1966) argued in their model that the fund manager who times the market is continuously changing the beta of her portfolio depending on the magnitude of the (Rm-Rf) term, thus portfolio’s beta fluctuates over many values. However, in terms of Henriksson and Merton model, the fund beta would take only two values: a large value if the market is expected to do well i.e when Rm>Rf (up-market) and a small value otherwise i.e. when Rm<Rf (down-market).

In this model, the successful market timers were assumed to be less sophisticated and their task was, to some extent, reduced in comparison to, say, the TM model. Therefore, a fund manager who is a successful market timer, as per this model, was required to select a high up-market beta and low down-market beta. They represented such a relationship mathematically by using a regression equation involving a dummy variable as follows:

$$R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma[D * (R_m - R_f)] + \epsilon_p \qquad (18)$$

Where D is a dummy variable that equals 0 in up-markets i.e. where Rm>Rf and -1 otherwise, i.e. when Rm<Rf. The other symbols are as defined in equation (17). A positive and significant value of ‘γ’ would indicate the market timing abilities of the fund manager.

It may be noted here that in both these models, the intercept term ‘α’ represents the stock selection ability of the fund managers.

Application of Conditional Models

Models

Treynor-Mazuy(T-M) and Henriksson-Merton(H-M) unconditional versions have been applied by many researchers in assessing the timing and stock selectivity skills of the fund managers. Unconditional models give an idea about the selectivity and market-timing abilities generated by the fund manager based on 'total information' available to him/her. The true selectivity and market-timing strategies lie in gathering private information and forecasting price fluctuations of equity stocks accordingly to form a portfolio of under-valued stocks. It is possible to eliminate the effect of common public information and reduce this source of bias with the use of conditional models.

In this study conditional versions of TM-models and HM-models are used in the analysis of market timing and stock selection skills of fund managers. For this purpose, one day lagged values of four widely incorporated market fundamental variables such as yield on 91-day Treasury bill, market dividend yield on sensex, Mumbai Inter-bank offer rate and fluctuation in daily rupee Vs. Dollar exchange rate are used for conditioning 'α's and 'β's. These variables were selected to represent money market, capital market, banking sector and foreign exchange market respectively as these segments influence the investment environment considerably.

Conditional alpha

$$\alpha = \alpha_0 + \alpha_1 * (DY_{t-1}) + \alpha_2 * (TB_{t-1}) + \alpha_3 * (FX_{t-1}) + \alpha_4 * (MIBOR_{t-1})$$

Conditional Beta

$$\beta = \beta_0 + \beta_1 * (DY_{t-1}) + \beta_2 * (TB_{t-1}) + \beta_3 * (FX_{t-1}) + \beta_4 * (MIBOR_{t-1})$$

Treynor and Mazuy (T-M) Conditional Model

$$R_p - R_f = \alpha_0 + \alpha_1 * (DY_{t-1}) + \alpha_2 * (TB_{t-1}) + \alpha_3 * (FX_{t-1}) + \alpha_4 * (MIBOR_{t-1}) + \beta_0 * (R_m - R_f) + \beta_1 * (DY_{t-1}) * (R_m - R_f) + \beta_2 * (TB_{t-1}) * (R_m - R_f) + \beta_3 * (FX_{t-1}) * (R_m - R_f) + \beta_4 * (MIBOR_{t-1}) * (R_m - R_f) + \gamma * (R_m - R_f)^2 + \varepsilon_{pt} \quad (19)$$

Where R_p = Return on the Fund

R_f = Risk free return

R_m = Return on the market portfolio

ε_{pt} = random error term

α_0 ,α_1 ,α_2, α_3,α_4, β_0 ,β_1 ,β_2 ,β_3 ,β_4,γ are the parameters of the regression equation and γ represents the market timing ability of the mutual fund managers while α_0 represents the stock selection ability.

Henriksson-Merton (H-M) Conditional Model

$$R_p - R_f = \alpha_0 + \alpha_1 * (DY_{t-1}) + \alpha_2 * (TB_{t-1}) + \alpha_3 * (FX_{t-1}) + \alpha_4 * (MIBOR_{t-1}) + \beta_0 * (R_m - R_f) + \beta_1 * (DY_{t-1}) * (R_m - R_f) + \beta_2 * (TB_{t-1}) * (R_m - R_f) + \beta_3 * (FX_{t-1}) * (R_m - R_f) + \beta_4 * (MIBOR_{t-1}) * (R_m - R_f) + \gamma * (R_m - R_f) * D + \varepsilon_{pt} \quad (20)$$

α_0 ,α_1 ,α_2, α_3,α_4, β_0 ,β_1 ,β_2 ,β_3 ,β_4,γ are the parameters of the regression equation. D is the dummy variable that equals 0 in up markets and -1 otherwise and γ represents the market timing ability of the mutual fund managers while α_0 represents the stock selection ability.

The α, β and γ coefficients obtained from regression equations (19) and (20) are tested for their statistical significance at 5% level. Positive and statistically significant alpha shows the superior ability of the fund manager in stock-selection and positive and significant value of gamma captures the market timing skills of the fund manager.

8. Chapter Layout

The study report is presented under six different chapters. The broad contents of each chapter are given below.

Chapter 1: Introduction

The first chapter serves as an introduction to the Indian Mutual Fund Industry, providing a comprehensive overview. It includes fundamental concepts related to mutual funds, outlines the structure of the Indian Mutual Fund Industry, discusses the classification and benefits of mutual funds, and delves into the regulatory framework and investor protection in India. Additionally, this chapter explores the evolution and growth of the Indian Mutual Fund Industry, offers a global perspective on the Mutual Fund Industry, and underscores the significance of the study.

Chapter 2: Literature Review

This chapter conducts a thorough review of existing literature, organizing it subject-wise and chronologically for a comprehensive understanding of the research context.

Chapter 3: Research Design

This section outlines the rationale for the study, research questions that are intended to be addressed, objective, and the hypotheses under examination. Additionally, it provides a comprehensive overview of the methodology employed in the current study, encompassing details on data sources, sampling methods, and the tools and techniques utilised for analysis. Furthermore, the chapter delves into the limitations inherent in the study.

Chapter 4: Measurement and Analysis of Risk and Return of Selected Schemes

This chapter delves into the assessment of risk and return, as well as the risk-adjusted performance of open-ended equity mutual fund schemes. The analysis includes a comprehensive examination of daily average returns, risk, and the diversification strategies employed by the selected schemes in the study. Additionally, the chapter encompasses the assessment of mutual fund schemes through the application of performance metrics such as the Sharpe ratio, Treynor ratio, and Fama's Decomposition measure.

Chapter 5: Analysis of Stock Selection and Market Timing Ability of Mutual Funds

This chapter focuses on evaluating the stock selection and market timing abilities of Open-Ended Equity Mutual Fund managers in India.

Chapter 6: Summary and Conclusion

This chapter provides a summary of the research findings and presents the conclusions drawn from the study, accompanied by appropriate recommendations.

9. Limitations of the Study

Any activity, howsoever diligently done, always contains shortcomings and limitations. The same holds for this research study also.

Following are some of the many limitations this research work contains:

1) Due to the necessity of maintaining a long-duration analysis, only funds with data spanning ten years or more, specifically those with data from 1-4-2012 or earlier, were included. Consequently, this led to a reduction in the sample sizes for each category.

2) The study is focused exclusively on various categories of equity schemes, and no other categories of mutual funds have been taken into consideration in this analysis.
3) The research is limited to a defined 10-year period, with exclusive focus on open-ended schemes featuring a growth option. Close-ended and dividend-paying schemes were not taken into account in the study.
4) The study is also restricted open-ended schemes with a growth option and ignored the close-ended schemes.
5) Owing to time, effort, and other constraints, it was not possible to include many other dimensions of mutual fund performance analysis available in the body of related literature, such as persistence in funds performance, the effect of size/ asset turnover/ ownership background/ flow of funds on mutual fund performance etc.
6) Yet another limitation of this study was the missing data points as regards the daily NAVs of mutual funds downloaded from the AMFI website.
7) It is crucial to acknowledge that past performance in mutual fund performance analysis does not necessarily serve as a reliable indicator of future performance, adding another layer of limitation to the study.

10. Findings based on Objectives, Research Question (RQ) and Hypothesis

10.1 Trends of Growth in Indian Mutual Fund Industry

Objective 1: To examine the growth and development of mutual fund business in India

RQ 1: How has the Mutual Fund business grown and developed in India over time?

Key Findings

- Over the past five decades, the Indian mutual fund industry has seen remarkable growth, evolving from its modest beginnings with ₹ 25 crore AUM in 1965 to a remarkable ₹ 37.57 lakh crore by 2022, achieving a compound annual growth rate (CAGR) of 23.26%.
- The industry's growth has been characterised by a shift towards equity-oriented schemes, which now dominate the market, which account for 32.53% of the total AUM, along with a notable presence of income/debt-oriented schemes (21.14%) and liquid /Money Market Fund/Floater Fund at 14.39% as on 31st March 2022.
- The number of available mutual fund schemes in India has expanded significantly, growing from 417 in March 2002 to 1,495 by March 31, 2022, reflecting a broadening of investment choices for investors. As of March 2022, open-ended schemes dominate the

market, accounting for 75% of the total, while close-ended schemes make up 24% and interval schemes just 1%.

- As of March 31, 2022, corporates held the largest share of the mutual fund industry's assets at 41.23% of total AUM, followed by High-Net-Worth Individuals (HNWIs) at 32.68%, while retail investors accounted for 24.61%. Despite mutual funds being designed to meet the specific needs of retail investors, these figures show that corporates have contributed more significantly to the AUM of the Mutual Fund Industry, with retail participation still trailing behind.
- During 2019-2022 period, approximately 50% of the household sector's financial assets in India were held in bank deposits, highlighting their enduring preference. Life insurance funds at around 24% emerged as the second most popular savings avenue, while mutual funds consistently represented less than 9% of total financial savings, indicating they are not the favoured choice for households.

The Indian mutual fund industry has seen significant growth and innovation, yet retail participation remains low, with corporates and HNWIs dominating. Despite their benefits, mutual funds have struggled to gain a substantial share of household savings, with bank deposits remaining the dominant choice. This preference for traditional savings methods highlights the challenges the mutual fund industry faces in gaining wider acceptance and mobilizing household savings effectively. To achieve broader acceptance, the industry must build trust and better engage with small savers.

Global outlook of Mutual Fund Industry

Key Findings

- Investors around the world have historically demonstrated strong demand for regulated open-end funds. In the past decade, worldwide net sales of regulated funds have totalled $18.8 trillion, and fund providers have expanded the vast array of choices, offering investors more than 137,000 regulated funds. By year-end 2022, regulated funds managed $60.1 trillion in total net assets.
- At the end of 2022, the global distribution of regulated fund assets was predominantly concentrated in the United States (48%) and Europe (32%), driven by their well-established regulatory frameworks. The Asia-Pacific region, while holding a smaller share (15%), has significant growth potential due to its large population and economic expansion.

- Analysis of distribution of worldwide total net assets of all regulated funds reveals that Equity funds were the most favoured investment vehicle globally, comprising 45% of total net assets, followed by bond funds at 19%.
- Regulated funds have become increasingly integral to global capital markets, accounting for 26% of the total value of equity and debt securities in worldwide capital markets by the end of 2022. The remaining 74% is held by diverse investors such as central banks, sovereign wealth funds, and households directly owning stocks and bonds.
- Notably, U.S. households invest a larger portion of their wealth in regulated funds, particularly long-term mutual funds, in contrast to European and Japanese households, who prefer bank deposits.
- The U.S. mutual fund industry remains dominant, with $22.1 trillion in net assets. U.S. households are the primary investors, holding 88% of total net assets, with 94% of long-term mutual fund assets under their control. Institutional investors hold the remaining 12%, primarily in money market funds. This reflects the differing strategic priorities and risk appetites of various investor groups in the U.S. market.

10.2 Findings on Performance of Equity Mutual Funds

10.2.1 Findings on Rate of Return Analysis and Benchmark Comparison

Findings for objective 2: To assess the financial performance of equity Mutual Fund schemes in terms of rate of return earned and to assess return of fund relative to market return and risk-free return.

RQ 2: Is Mutual Fund performance superior to market benchmark?

Hypothesis 1: There is a significant difference between the sample fund return and the benchmark index return.

Key Findings: The Analysis of log return of sampled mutual funds over a 10-year period revealed several key findings across various fund categories.

- All sampled funds yielded positive returns above the risk-free rate.
- Performance of the fund relative to their benchmarks varied significantly. In the large-cap category, a majority of the funds (75%) underperformed their benchmarks. Similar trends were observed in Large & Mid Cap funds (73%), Multi-Cap funds (60%), and Dividend Yield funds (67%), where a substantial portion of the funds failed to exceed their respective benchmarks. Conversely, Small Cap funds demonstrated robust performance, with the vast majority (89%) surpassing the benchmark. Equity Linked Savings Schemes

(ELSS) (52%), Contra funds (67%), and Focused Equity Funds (50%), Flexi Cap funds (67%) showed a tendency to outperform, with most of the funds in these categories outperforming the benchmark index. The analysis underscores the importance of careful fund selection, particularly in categories where underperformance relative to benchmarks is more common. The statistically significant outperformance of Small Cap funds stands out as a notable exception to the broader trend of underperformance across other categories.

- In the comparative analysis of mean return of mutual fund categories, Small Cap Funds emerged as the top performers with the highest mean return (0.0704), followed closely by Mid-Cap Funds (0.0680), while Dividend Yield Funds delivered the lowest returns (0.0504).
- The Paired Sample T-test, used to assess the differences in mean returns between fund categories and their benchmarks, showed that Small Cap Funds significantly outperformed their benchmarks, while Large Cap Funds significantly underperformed. No statistically significant differences were observed in the mean returns of other fund categories compared to their benchmarks. Despite higher average returns in eight fund categories, most differences lacked statistical significance.

The data suggests that actively managed equity funds can generate positive returns above the risk-free rate, with certain categories, particularly Small Cap and Value Funds categories, showing a notable number of funds outperformance. However, overall, just over half, 50.4% (63 out of 125) of the sampled schemes managed to surpass their benchmark indices.

10.2.2 Findings on Risk Analysis and Benchmark Comparison

Findings for objective 3: To assess the total risk and systematic risk of equity mutual fund schemes.

RQ 3: How do the risk-return parameters vary among different categories of equity funds?

Hypothesis 2: There is a significant difference between the variability of the fund return and the variability of the index return.

Total Risk (Standard Deviation Values): Key Findings

The analysis of Standard deviation values shows that Large-Cap, Mid-Cap and Small-Cap, and Dividend Yield funds had significantly lower mean standard deviation values than the benchmark, indicating superior risk management. This difference also proved to be highly

significant in the case of Mid-Cap Funds. Individual scheme analysis revealed that none of the Mid-Cap, Dividend Yield, and Contra funds had higher standard deviation values than their indices, while only 11% of Small-Cap funds do, indicating a generally lower risk profile of these categories. In contrast, 70% of Focus and 63% of Value funds exceed their indices in standard deviation, indicating a relatively higher risk profile in these categories. Multi-Cap and Flexi Cap funds show a balanced distribution between higher and lower risk levels. In other categories of funds, a larger proportion of funds demonstrated a lower risk profile compared to the market.

The analysis of standard deviation values reveals that most fund categories exhibit a general tendency toward a lower risk profile. Moreover, some of the fund categories, such as Small-Cap and Mid-Cap funds, not only exhibit lower risk but also achieve superior returns compared to market benchmarks, reflecting effective risk management within these categories.

Market Risk (Beta Values): Key Findings

The measurement of Systematic Risk, often referred to as Market Risk, is assessed through the calculation of beta values for each of the selected funds. All the 125 equity funds included in the sample exhibited positive beta values. The fact that all the sampled funds displayed positive beta values suggests that they tend to move in tandem with the broader market.

The analysis of average beta values for different categories, revealed that the Large & Mid Cap category exhibited the highest average beta value, whereas the Small-Cap category had the lowest average beta value. None of the beta values are exactly equal to zero and thus their returns are not independent of the market. Very few schemes have beta values equal to one or greater than one and thus most of the values falls in the range of $0 < \beta < 1$. This signifies the fact that the returns of the sample schemes are volatile, but not as risky as that of the market. Overall, the analysis underscores the prevalence of moderate risk profiles (0.8-1.0) across various fund categories, indicating a balance between volatility and returns. A noteworthy finding is that the Small-Cap Category predominantly comprises Funds falling within the lowest range of 0-0.8, with none of the Funds in this category having a beta value exceeding one.

10.2.3 Findings on Diversification

Objective 4: To assess how effectively the equity funds has diversified its portfolio to minimise risk and maximise returns.

RQ 4: Do investors receive the benefits of diversification through Mutual Funds?

The analysis of R-Square values across various mutual fund categories highlights a common trend of greater diversification in growth-oriented schemes. In each category, the number of schemes in the lower diversification ranges ($R^2 < 0.2$ or R^2 between 0.2 and 0.5) is relatively limited, while the majority of schemes exhibit the highest level of diversification ($R^2 > 0.8$). Specifically in Large Cap Category 95%, Large & Mid Cap Category 93%, Multi-Cap 80%, Mid-Cap 80%, Small-Cap 78%, Value 62%, ELSS 90%, Contra 100%, Dividend Yield 67%, Focus 70% and Flexi-Cap 80% are highly diversified ($R^2 > 0.8$).

The analysis suggests that equity-oriented schemes, regardless of their specific category, tend to prioritise a high degree of diversification in their investment portfolios. Although there is some variation within each category, most funds prioritise strong diversification, consistent with their growth-oriented goals. This indicates a trend towards a more diversified investment approach in these funds, which can help mitigate risk and enhance returns over the long term.

10.2.4 Findings on Risk- Adjusted Rate of Return Analysis

Findings for Objective 5: To assess the financial performance of equity Mutual Funds schemes in terms of risk-adjusted returns.

RQ 5: How do equity mutual fund schemes perform in terms of risk-adjusted returns?

Sharpe's Measure of Performance – Key Findings

Hypothesis 3: There is a significant difference between the Sharpe ratio of sample Mutual Funds and their benchmark indices.

One noteworthy observation is that all the funds under consideration have exhibited positive Sharpe ratios. This signifies that every equity mutual fund in this study has managed to yield returns surpassing the risk-free rate of return. This is a positive indicator, demonstrating that these funds have, on the whole, outperformed a risk-free investment, which is typically considered the baseline expectation for any investment strategy. Examining the Sharpe Ratio, the Mid-Cap Fund category exhibits the highest average value (0.0499), followed by Small-Cap Fund (0.0487), while Large Cap Funds show the lowest (0.0329), with the Mid-Cap Funds and Small-Cap Funds demonstrating significant outperformance. Comparative

Analysis of Sharpe Ratio of different categories of Mutual funds indicates that Mid-Cap Funds had the highest average value (0.0499), followed by Small-Cap funds (0.0487), while Large Cap Funds had the lowest average value (0.0329). The mean values of Mid-Cap and Small-Cap Funds were also found to be significantly superior to the benchmark index. For the other fund categories, the mean difference between the fund and the index was not statistically significant. This suggests that Mid-Cap and Small-Cap funds generally delivered better risk-adjusted performance. Investors in these funds enjoyed improved returns relative to a passive market index investment, making these funds an attractive option for those seeking a balanced risk-return profile in their portfolios.

Analysis of individual scheme performance in different equity categories revealed that all three Contra Funds outperformed the benchmark, showcasing their strong performance, followed by Small Cap Funds with an 89% outperformance rate. Large & Mid Cap funds had the lowest percentage of funds (27%) outperforming the benchmark index. Overall, in terms of Sharpe Ratio, out of the total 125 sample schemes, around 56% (70 schemes) have outperformed the benchmark index, while the remaining 44% (55 schemes) have fallen short of their respective benchmark indices.

Treynor Measure of Performance – Key Findings

Hypothesis 4: There is a significant difference between the Treynor ratio of sample Mutual Funds and their benchmark indices.

The findings on risk-adjusted performance evaluation using Treynor's index closely mirror those derived from Sharpe's measure. All the sample equity mutual funds exhibit positive Treynor ratios, indicating that each of these schemes has generated returns greater than the risk-free rate. The Treynor Ratio analysis reveals that the ELSS Fund category boasts the highest average value (0.0837), while the Dividend Yield Fund category has the lowest (0.0363).

Analysis of Individual schemes in different categories revealed that all Small Cap and Contra Funds (100%) have outperformed the market index, followed by the Mid-Cap category, where 80% of funds have exceeded the market index performance. In stark contrast, Large & Mid Cap Funds and Dividend Yield Funds show the lowest percentage (26%) of funds surpassing their respective indices.

Both Small Cap and Mid-cap categories have delivered significantly superior returns relative to their benchmarks. Overall, the Treynor Ratio indicates that out of the 125 sampled schemes, a majority, approximately 67% (84 schemes), have outperformed the benchmark index, while the remaining 33% (41 schemes) have not achieved the performance levels of their respective benchmarks.

10.2.5 Fama's Components of Investment Performance -Key Findings

In an analysis of eleven different categories of Indian equity mutual funds using Fama's Model, several common trends emerge. All sampled equity schemes in these categories exhibit positive compensation for systematic risk (risk premium) and compensation for inadequate diversification. This suggests that investors generally receive a return that compensates them for bearing risk and not diversifying adequately.

However, when examining the concept of net selectivity, a considerable variation is witnessed among different categories, with negative net selectivity values in some of the categories. A substantial proportion of Funds within certain categories display positive net selectivity values. Notably, the Contra Fund, Small Cap Fund, and Mid Cap Fund stand out with the highest percentage of positive net selectivity values, achieving 100%, 89%, and 80%, respectively. Conversely, Large-Cap, Large & Mid Cap Funds, Dividend Yield funds, and ELSS categories exhibit a larger proportion of funds with negative net selectivity values. The Large and Mid-Cap fund category demonstrates the weakest performance, with only 27% of funds showcasing positive net selectivity values. These findings can be valuable for investors looking to allocate their Funds based on the historical performance of different Mutual Fund categories.

10.2.6 Comparison across Category of Equity Funds: Key Findings

Objective 6: To have a comparative assessment of the risk-return profiles of different equity fund categories and identify their relative strengths and weaknesses.

RQ 3: How do the risk-return parameters vary among different categories of equity funds?

Hypothesis 5: There is a significant difference in the return of selected equity Mutual Fund schemes across fund characteristics.

The performances of eleven different categories of equity funds, viz. the Large-cap, Large & Mid Cap, Multi-Cap, Mid-Cap, Small-Cap, Value, ELSS, Contra, Dividend Yield, Focus, Flexi-Cap funds were compared over the period April 2012 - March 2022 on the basis

parameters like risk, return, Sharpe Ratio, Treynor Ratio. In order to test the hypothesis that there is no difference in terms of return and risk and risk-adjusted return parameters among the different categories of Equity Mutual Funds, ANOVA was applied. Further, for the parameters in which significant difference was observed, Bonferroni Post Hoc test was utilized to identify specific pairs of equity mutual funds that demonstrate statistically significant differences with regard to the specific parameters used in the assessment of performance. The following are the summary findings on the same.

Key Findings

- The mean returns were found to have significant differences in ten pairs of equity mutual funds. Notably mean return value of Mid-Cap Fund was found and Small-Cap fund was found to be significantly superior to 5 different categories of Equity Mutual funds, namely, Large-Cap, ELSS, Dividend Yield, Focus and Flexi-Cap Funds. No other statistically significant differences in Sharpe Ratios were observed among the remaining pairs of equity funds.
- The total risk (as measured by standard deviation value) of different categories of equity mutual Funds did not differ significantly.
- Sharpe Ratios were found to have significant differences in seven pairs of equity mutual funds. Notably mean Sharpe value of Mid-Cap Fund was found to be significantly superior to 4 different categories of Equity Mutual funds, namely, Large-Cap, Large-Mid Cap, ELSS, Focus and Flexi-Cap Funds. Additionally, Small Cap funds exhibited a statistically superior Average Sharpe Ratio compared to Large-Cap and Flexi-Cap funds. No other statistically significant differences in Sharpe Ratios were observed among the remaining pairs of equity funds.
- With respect to Treynor Ratio Results of ANOVA indicates no statistically significant differences among various categories of equity mutual funds.

10.2.7 Findings on Stock Selection and Market Timing Ability of Equity Fund Managers

Objective 7: To investigate the stock selection skills of Indian mutual fund managers and perform a comparative analysis stock selection skill across different equity scheme categories.

RQ 6: Do mutual fund managers possess the skills necessary for effective stock selection, and how does their stock selection skill vary across different categories of equity funds?

Hypothesis 9

Equity mutual fund managers are successful at stock selection.

Stock Selection Skills of Equity Fund Managers - Jensen Measure: Key Findings

The analysis of Jensen alpha values across various fund categories reveals significant variations in the stock-picking abilities of fund managers. Small-cap category had the highest percentage of funds (100%) with positive values and the highest percentage (44%) exhibiting significant positive Jensen alpha values. In contrast, only 5% of large-cap funds and none of the funds in the contra and dividend yield categories showed significant positive values. Additionally, the large-cap category on a comparative basis had a higher proportion of funds with significant negative alpha values. Other categories with significant negative alpha values included Flexi-Cap and Large & Mid Cap funds. Except for these 3 categories none of the other categories had funds with negative alpha value. Thus Large cap fund, Large & Mid Cap funds and Flexi-Cap Schemes show limited success, while Multi Cap Funds and Small Cap funds demonstrate a more favourable trend, with a substantial percentage displaying statistically significant positive alpha. These study results have effectively addressed Research Questions 6 (RQ 6), meeting the seventh objective as well.

Findings on Stock Selection Skills of Equity Fund Managers: Treynor-Mazuy (T-M) and Henriksson-Merton (H-M) (Unconditional) Model

Stock Selection – Treynor-Mazuy (Unconditional) Model: Key Findings

The analysis of stock selection skill based on Treynor-Mazuy Model (Unconditional) reveals that a substantial portion (67%) of Small-Cap equity funds have successfully generated significant positive alpha values, indicating that fund managers in this category have skilfully included stocks with high growth potential during the examined period. Mid-Cap funds also performed strongly, with a majority (60%) achieving significant positive alpha values. In contrast, Large & Mid-Cap Funds (13%) and Large-Cap funds (14%) exhibited the lowest occurrence of significant positive alpha values, suggesting more modest stock selection success in these categories. Statistically significant negative alpha values, indicating incorrect stock selection skills were primarily observed in a few categories: Large Cap (14%), Large

and Mid-Cap (13%), and Flexi Cap funds (13%). However, even within these categories, the proportion of funds with significant negative stock selection was relatively low. In all other categories, no funds displayed statistically significant negative alpha values.

Stock Selection - Henriksson-Merton (Unconditional) Model: Key Findings

The analysis of stock selection skill of equity fund managers based on the H-M Model, reveals intriguing patterns in stock selection skills across various fund categories. Dividend Yield Funds stood out, with all funds achieving significant positive alpha values, reflecting the exceptional stock selection abilities of their managers during the period studied. Contra Funds also performed strongly, with a majority (67%) attaining positive alpha values. Other categories, such as Value Funds (63%) and Small-Cap Funds (56%), demonstrated a notable presence of significant positive alpha values, indicating effective stock selection. On the other hand, Large and Mid-Cap Funds (20%), as well as Multi-Cap Funds (20%) showed the lowest occurrence of significant positive alpha values, suggesting more modest stock selection success in these categories. Statistically significant negative alpha values were rare across the analysed funds. Specifically, only five Equity fund categories exhibited this phenomenon: Large Cap (14%), Large and Mid-Cap (13%), Multi Cap (20%), Focus Funds (20%), and Flexi Cap Funds (7%), exhibited instances of underperformance. This trend aligns with the findings from the T-M Model, indicating that funds with statistically significant negative values were relatively uncommon.

Findings on Market Timing Ability of Equity Fund Managers - T-M and H-M – (Unconditional) Model

Objective 8: To investigate the Market Timing skill of Indian mutual fund managers and perform a comparative analysis of Market Timing skill across different equity scheme categories.

RQ 7: Do mutual fund managers possess the skills necessary for effective Market Timing, and how does their Market Timing skill vary across different categories of equity funds?

Hypothesis 10

Equity mutual fund managers are successful at market timing.

Market Timing - Treynor-Mazuy (Unconditional) Model: Key Findings

The analysis of market timing ability based on T-M Model highlights a conspicuous trend: the proportion of funds exhibiting statistically significant positive gamma values is notably low. In fact, with the exception of four fund categories – namely, Large-cap (14%), Large &

Mid Cap (7%), Multi Cap (20%), and Focus Fund (10%) – the funds manifesting statistically significant gamma values is practically nil. Even within these four categories, the occurrence of statistically significant positive values remains relatively limited. Among these categories, the Multi Cap category stands out, boasting the highest proportion (20%) of funds that have managed to attain statistically significant positive values. Following closely behind is the Large-cap fund category, with 14% of its funds achieving the same feat. However, a deeper examination reveals a noteworthy pattern: a substantial number of funds across different categories are characterised by significant negative gamma values. Notably, all three schemes within the contra and dividend yield fund categories exhibit significant negative gamma values. Furthermore, a considerable 80% of the Mid Cap funds and 78% of the Small Cap funds are associated with significant negative values.

This trend of funds predominantly exhibiting negative values raises an intriguing point. It suggests that there might be a prevailing tendency among fund managers to engage in market timing strategies, albeit with outcomes that lean towards the wrong direction. This inference could indicate a larger issue within the industry – a collective inclination to mistime market entry and exit points. The observed distribution of positive and negative gamma values across different categories sheds light on the challenges and tendencies that fund managers face when trying to time the market effectively.

Market Timing - Henriksson-Merton (Unconditional) Model: Key Findings

The findings from the Henriksson-Merton Model reveal results that are quite consistent with results of Treynor-Mazuy Model. Breaking down the results by fund categories, it was observed that the highest percentage of funds exhibiting statistically significant positive values was in the case of Focus (20%) and multi-cap category funds (20%). Following this, the Large & Mid Cap category showed a moderate percentage (27%) of funds with significant positive values, while only 14% of Large Cap funds demonstrated such positive values. Interestingly, no other fund categories displayed statistically significant positive market timing values. However, a notable trend emerged highlighting negative market timing. The percentage of funds displaying statistically significant negative values exceeded those with positive values. Specifically, all three Dividend Yield funds and Contra Funds exhibited significant negative values. Moreover, a substantial 63% of Value funds displayed significant negative values as well. It is crucial to underline that across all fund categories, a significant proportion (more than 20%) of funds showcased statistically significant negative values. This trend underscores the challenges faced by fund managers in accurately timing

the market, often leading to market timing decisions that result in unfavourable outcomes. Multi-Cap fund category exhibited the lowest percentage (20%) of funds with significant negative values.

These results suggest that the fund managers are more inclined towards stock selection than market timing. This result is also in line with the findings of other researchers utilising data from the Indian Mutual Funds such as studies by Guha Deb et al. (2007), Raju and Rao (2009), Rakesh Kumar (2012), Rajesh Mishra and Vishal Ahuja (2016), Sumana B. and Shivaraj (2017), Vikas Choudhary and Preeti Sehgal Chawla (2016), and Dhanraj Sharma (2016).

The Correlation Between Selectivity and Market Timing - T-M and H-M Unconditional Model: Key Findings

A significant observation in the study is the high negative correlation coefficient between Selectivity and Timing abilities across all 11 categories of Equity Funds. Additionally, more than 50% of funds in each category exhibited opposing signs for the T-M (stock selection) and H-M (market timing) models. This pervasive negative correlation indicates an inverse relationship between Selectivity and Timing performance. Few funds demonstrated proficiency in both stock selection and market timing, with a general trend where those excelling in stock selection lacked market timing skills, and vice versa. This finding aligns with previous studies, suggesting evidence of activity specialisation among mutual fund managers (Chen et al.,1992).

Stock Selection and Market Timing - T-M and H-M Model (Unconditional Model) Overall Analysis: Key Findings

Out of 125 schemes analysed, the T-M and H-M Models reveal that 30% and 44% exhibited statistically significant stock selection skills, respectively, with only 6% and 7% showing significant negative alpha. In terms of market timing, 5% (T-M) and 8% (H-M) displayed significant market timing abilities, while 62% (T-M) and 47% (H-M) showed significant negative timing coefficients. This highlights a stronger prevalence of stock selection skills over market timing prowess among equity mutual funds, with most categories failing to achieve significant positive gamma values and many experiencing negative market timing outcomes.

Results of Pooled Regression: Stock Selection and Market Timing -T-M and H-M Unconditional Models: Key Findings

The pooled regression analysis for both the T-M and H-M Models across 11 equity fund categories showed positive alpha values for all schemes, with 73% and 82% of categories demonstrating statistically significant alphas, respectively. None of the schemes exhibited negative alpha values. However, as per T-M unconditional model all schemes displayed statistically significant negative market timing coefficients, indicating consistent misjudgement of market movements. As per H-M Conditional Model only one category, Multi Cap, showed a positive market timing coefficient, which was not statistically significant. All the other 10 categories had negative market timing coefficients, out of which negative gamma values of 9 categories (82%) was found to be statistically significant. Overall, the results suggest strong stock selection skills but a lack of successful market timing, with consistent evidence of mistimed market movements.

Findings on Stock Selection Skills of Equity Fund Managers - Treynor-Mazuy and Henriksson-Merton (Conditional) Model

Stock Selection – Treynor-Mazuy (Conditional) Model: Key Findings

The analysis based on T-M (unconditional) model reveals that the vast majority (67%) of small Cap equity Funds have been able to generate significant positive alpha values indicating that the fund managers of small cap schemes have been able to include stocks having potential to appreciate during 2012-2022. This is followed by Contra funds with 33% of funds achieving significant positive alpha value, 25% of funds in the case of Value funds and 5% in the case of ELSS Funds. In the rest of the categories none of the schemes had statistically significant stock selection coefficients. Thus, in the case of conditional models, considerable reduction in significant positive values were witnessed. Statistically significant negative alpha values were found only in the case of 2 different categories of Equity funds namely Mid Cap (7%), Focus (10%) funds. Even in these categories where significant negative selectors were identified, the proportion of funds having such significant negative stock selection coefficients were relatively low. In all the other categories, none of the funds had statistically significant negative alpha value.

Stock Selection - Henriksson-Merton (Conditional) Model: Key Findings

The analysis that was done using H-M (Conditional) Model showcases fascinating patterns across different fund categories in terms of stock selection skills. Notably, all Dividend Yield Funds achieved a remarkable feat, boasting statistically significant positive alpha values. Following suit, Contra Funds performed well, with 67% of them attaining significant positive alpha values, followed by Value fund at 63% and Small-Cap funds at 56% and Large and Mid-Cap Funds at 7%. However, none of the funds had statistically significant positive alpha values in the rest of the categories. Statistically significant negative alpha values were identified in the case of 4 categories viz Large-Cap (10% of the funds), Mid-Cap funds (7%), ELSS (5%) and Focus (10%). In the rest of the categories none of the funds had statistically significant negative stock selection coefficients.

Analysis of stock selection skills using the T-M and H-M conditional models indicates significant positive alpha values in categories like Small Cap, Value, and ELSS Funds (T-M Model) and Small Cap, Value, Contra, and Dividend Yield (H-M Model). However, the overall number of significant positive values is reduced under these models. Even in categories with significant negative selectors, the proportion of such funds is relatively low. Overall, conditional models show a notable reduction in significant alpha values as compared to Conditional models. This section of the thesis has responded to the Research Question 6 (RQ 6) and fulfilled the seventh objective outlined in the study.

Findings on Market Timing Ability of Equity Fund Managers: Treynor-Mazuy and Henriksson-Merton (Conditional) Model

Market Timing - Treynor-Mazuy (Conditional) Model: Key Findings

The analysis of market timing ability based on T-M (conditional) Model reveals that Multi-Cap funds has the largest (40%) number of funds with significant positive stock selection coefficients, followed by Large & Mid Cap funds at 20%, Focus at 20% , Large- Cap funds at 14% and Mid-Cap funds at 13%. In the rest of the categories such noteworthy market timing ability is not witnessed with none of the funds having significant positive gamma values.

Data clearly indicates the inclination of fund managers to time the market in wrong direction with all the funds having significant negative gamma values, with all the schemes of contra and dividend yield funds having significant negative gamma values, followed by Small Cap

funds at 78%, Value funds with 75% of funds, Focus funds at 50% of funds having statistically significant negative gamma values.

Market Timing - Henriksson-Merton (Conditional) Model: Key Findings

The findings on Market Timing ability from the Henriksson-Merton (Conditional) Model revealed results that are quite consistent with results of Treynor-Mazuy Model. A notable trend emerged highlighting negative market timing. Specifically, all three Dividend Yield funds exhibited significant negative values. Moreover, a substantial 67% of Contra funds and 63% of Value funds displayed significant negative values as well.

As in the case of unconditional models, analysis using conditional models also underscores the prevalence of negative market timing outcomes. But the instances of statistically significant outcomes have considerably reduced in conditional models as compared to unconditional models. By incorporating additional macroeconomic variables and conditioning on public information factors, the number of incorrect market timing decisions was significantly reduced. This suggests that controlling for public information variables effectively eliminates the biases found in unconditional models. These findings are consistent with the studies conducted by Ferson and Schadt (1996) and Guha Deb et al. (2007).

Stock Selection and Market Timing - Treynor-Mazuy and Henriksson-Merton (Conditional) Model - Overall Analysis: Key Findings

Out of 125 schemes, the Treynor-Mazuy and Henriksson-Merton Models found that 8% and 13% showed significant stock selection skills, while 2% and 4% exhibited negative alpha values. For market timing, 10% of funds demonstrated significant abilities under both the models, but 43% (T-M) and 34% (H-M) had negative timing coefficients. Overall, the conditional models confirm that stock selection is more prevalent than market timing, with most funds failing to achieve positive gamma values and frequently showing negative timing outcomes. There is also a reduction in significant outcomes in the conditional models compared to the unconditional models.

Pooled Regression: Stock Selection and Market Timing (Conditional Model): Key Findings

The pooled regression results for both the TM and HM models are presented. In the TM model, 36% of categories show positive stock selection capabilities, but none reach statistical

significance. Conversely, 64% exhibit negative stock selection capabilities, with no significant coefficients. Market timing in the TM model demonstrates 2 (18%) categories with positive coefficients, one (9%) of which is significant, while 82% exhibit negative coefficients, with 64% being statistically significant. For the Henriksson-Merton model, all 11 categories display positive stock selection coefficients, with 82% being statistically significant. However, only one category shows a positive market timing coefficient, lacking significance, while the rest exhibit significant negative coefficients. Overall, robust stock selection skills are evident, but there's a lack of statistically significant market timing abilities across both models, with consistent evidence of market timing in the wrong direction.

Research Implications

The findings of this thesis on the performance evaluation of mutual funds have several critical implications for fund managers, investors, and policymakers. Additionally, the insights gained from this research provide valuable guidance for future studies and practical advancements in the field. The key implications are outlined below.

- The research underscores the transformative growth of the mutual fund industry in India and globally, highlighting both its achievements and persistent challenges. In India, the industry's evolution from a single entity to a competitive arena with diverse players reflects its increasing appeal, yet retail participation remains low. Despite their benefits, mutual funds have struggled to gain a substantial share of household savings, with bank deposits remaining their dominant choice. Investors should consider mutual funds for their diversification benefits, while fund managers and regulators need to focus on building trust, improving their active management skills to generate superior returns and enhancing investor education to boost broader acceptance.
- The research findings affirm that actively managed mutual funds deliver superior returns compared to traditional savings methods like bank fixed deposits, as all sampled funds generated positive returns above the risk-free rate. This evidence highlights the effectiveness of mutual funds in surpassing conventional savings options. Furthermore, mutual funds provide the added benefits of professional management and diversification, which help manage risk and improve investment performance. Therefore, investors who park a substantial portion of their savings in

bank deposits, should consider shifting a portion of their savings to mutual funds to capitalise on these advantages and achieve better returns.

- The research offers valuable insights into the debate between actively managed funds and passive benchmarks. While 50% of equity funds outperformed their benchmarks based on raw returns, the proportion increases when considering risk-adjusted metrics, with 53% surpassing the benchmark according to the Sharpe Ratio and 67% according to the Treynor Ratio. While actively managed funds have the potential to deliver superior returns, their performance is not universally superior across all categories. Particularly some of the categories such as Small Cap and Mid-Cap funds stand out as exceptions, consistently outperforming their benchmarks and exhibiting superior risk-adjusted returns. However, the study also reveals that underperformance is notable in certain categories, such as Large-Cap and Large & Mid Cap Funds, where only a small percentage outperformed benchmark. This highlights that active management was able to add value in certain segments, but may struggle in others. For investors, this suggests that while actively managed funds can deliver superior returns, careful selection is crucial, and some fund categories may not justify their active management costs. These findings suggest that while active management can add value in certain segments, investors should carefully select funds and consider blending active and passive strategies to optimise returns and manage risks effectively, especially in categories with widespread underperformance.
- The research highlights the crucial role of stock selection skills in driving superior returns for equity mutual funds, as evidenced by the statistically significant positive alpha values across various categories. Fund managers have demonstrated competence in selecting stocks with potential for appreciation, which reinforces the value of active management in achieving investor goals. However, the findings also reveal a consistent struggle with market timing, as most fund categories failed to generate positive gamma values, often leading to negative market timing outcomes. The findings indicate that equity fund managers should focus on honing their stock selection skills, as these have proven more effective in generating positive returns. Although stock selection is a clear strength, there remains a critical need for managers to improve their market timing abilities to prevent mistimed decisions that could negatively impact overall performance.

11. Recommendations

11.1 Recommendations for the Investors

- It is prudent for the investing public to explore equity mutual funds. While there are numerous reasons supporting this assertion, the most compelling one is as follows: study showed that all mutual funds reviewed delivered returns above the risk-free rate, with many surpassing benchmark indices. Across six distinct categories, a higher proportion of funds showcased superior performance compared to those that fell short. Notably, 89% of Small Cap funds and 75% of Value funds outperformed their benchmarks. Furthermore, most funds exceeded their benchmarks on risk-adjusted metrics such as the Sharpe and Treynor Ratios. There is substantial evidence supporting the wealth creation potential of actively managed mutual funds in some of the equity categories. To capitalise on this, investors should allocate some funds to actively managed mutual funds alongside passive index funds. Instead of leaving funds idle or in bank deposits, retail investors should consider investing in mutual funds to benefit from economic growth and participate in wealth creation.
- Indian retail investors can enhance their participation in the mutual fund industry by taking inspiration from the high level of involvement seen among US households. As of year-end 2022, US households held a substantial 88% of total mutual fund net assets, showcasing the widespread acceptance and trust placed by individual investors in this financial instrument. In contrast, Indian retail investors make up only approximately 24.61% of the total Assets Under Management (AUM) in mutual funds as of March 31, 2022. To close this gap and leverage professional management benefits, Indian investors should allocate more of their investment portfolios to mutual funds. This approach grants access to diversified, professionally managed portfolios known for long-term wealth creation. It aligns with global trends and empowers Indian investors to leverage mutual fund managers' expertise for capital market success.
- Mutual funds offer a convenient avenue for small investors to access the capital market and benefit from professional management. Adopting systematic investment plans (SIPs) can be a prudent strategy, allowing investors to contribute small, regular amounts over time, mitigating the impact of market volatility and promoting disciplined, long-term wealth creation. By embracing mutual funds and SIPs, Indian retail investors can align themselves with a globally proven investment approach and harness the expertise of professional fund managers for sustained financial growth.

- A comparison of household savings allocation between India and the United States reveals a significant difference in investment choices. In India, about 50% of financial assets go into bank deposits, with mutual funds at less than 9%, contrasting with the U.S. where bank-related products account for 14% and regulated funds for 20%. Indian retail investors could benefit from reevaluating their strategies by increasing mutual fund allocations. While bank deposits offer stability, diversifying into mutual funds can potentially yield higher returns and exposure to diverse market opportunities.
- Investors should exercise caution and prudence when selecting mutual funds for their investments, especially considering the inherent volatility of the stock market. As demonstrated in this study, certain categories, such as Large-Cap and Large & Mid Cap, have not performed satisfactorily compared to their benchmarks. It is advisable to conduct thorough personal research, analyse the historical performance of the funds, and carefully assess the fund manager's track record. Furthermore, seeking advice from financial experts or advisors can provide valuable insights and guidance tailored to individual financial goals and risk tolerance. Diversifying investments across different types of mutual funds can also help mitigate risks associated with market fluctuations.
- Findings suggest that while active management can add value in certain segments, investors should carefully select funds and consider blending active and passive strategies to optimise returns and manage risks effectively, especially in categories with widespread underperformance.

11.2 Recommendations to Asset Management Companies

- Prudent fund management is crucial for asset management companies to achieve their financial objectives while minimising risks. In this respect fund managers will have to ensure that investment strategies align with the risk tolerance and goals of the investors. Conduct thorough research and analysis before making investment decisions. Maintain transparency with investors by providing clear and accurate information about the fund's performance, holdings, and strategy.
- The Small Cap fund category has demonstrated remarkable outperformance in comparison to other fund types. Mutual fund managers should focus on attracting more investments into this equity category, given its substantial potential. Identifying the correct stocks for investment is crucial in this sector, albeit with increased risk.

- Certain equity categories, such as Large Cap, Large & Mid Cap, ELSS, and Dividend Yield, have exhibited subpar performance compared to their respective benchmarks. In these categories, the percentage of funds outperforming their respective benchmarks fell below 40%. This signifies a general trend of underperformance in the majority of funds within these categories. Given that these categories, especially Large Cap and ELSS funds, attract substantial investments with high investor expectations, fund managers must adopt a cautious approach to navigate the volatile market conditions. The significant allure of ELSS lies in the tax benefits it offers; however, if the performance falls short, investors may seek alternative options to optimise their tax liability. Fund managers should conduct a comprehensive analysis of underperforming stocks within these categories, identifying key challenges and areas for improvement. It may be prudent to reassess investment strategies or explore new opportunities to enhance performance in these crucial equity segments.
- Analysis of Average return values indicates that approximately 50% of the sampled actively managed equity mutual funds considered in this study were not able to outperform their benchmark. The investors also have the option of investing in passive index funds, where the fund management fees are considerably lower. Thus to attract investors into these actively managed equity funds and also to optimise returns for the investors in these actively managed equity mutual funds, it is imperative to scrutinise and minimise unnecessary costs and fees associated with fund management. Additionally, negotiating favourable terms with service providers and trading partners can contribute significantly to the overall profitability of a mutual fund.
- Jensen alpha analysis reveals that large-cap fund managers struggle with stock-picking, with only 5% showing significant positive alpha and 10% showing significant negative alpha. Managers of Large & Mid Cap and Flexi-Cap funds also display significant negative alpha, indicating a need to reassess their portfolios. To improve alpha generation, these managers should refine their stock-picking methods and explore alternative strategies. Continuous market monitoring and adaptation are essential for overcoming challenges and seizing opportunities in these fund categories.
- Fund managers of actively managed equity mutual fund schemes should establish a comprehensive research and analysis framework, closely monitoring market trends, economic indicators, and geopolitical events. Implementing a robust system to continuously evaluate fund performance against benchmarks and peer groups is crucial.

Regular assessments and adjustments, guided by thorough analysis, will enable proactive management and enhance investor confidence. Prudent decision-making, based on a deep understanding of market dynamics, is key to achieving long-term success. Staying informed and agile in response to changing market conditions will position fund managers to navigate the volatile stock market effectively and optimise returns for investors.

- Mutual fund asset management companies need to proactively raise awareness about the benefits of Systematic Investment Plans (SIPs) as a prudent investment strategy, especially during periods of market volatility. By disseminating information through targeted campaigns, educational initiatives, and investor outreach programs, asset management firms can effectively communicate the stability and long-term advantages associated with SIPs.
- Asset Management Companies (AMCs) must prioritise transparency in offer documents and annual reports, clearly disclosing investment style, strategies, and performance indicators to build investor trust. Comprehensive information on risks, risk-adjusted returns, costs, including management fees, is essential. Publicly sharing performance indicators enables investors to compare AMCs performances, fostering informed investment decisions.
- Adhering to the principle that corporate vitality hinges on growth, the mutual fund industry must strategically innovate to introduce new products with unique features, thereby attracting substantial resources. Operating with an augmented corpus is made possible through this approach, allowing Asset Management Companies (AMCs) to thrive. It is evident that an AMC with a significant Asset Under Management (AUM) is better equipped to cultivate a well-diversified portfolio, subsequently extending the advantages of such diversification to its investors. Stagnation, on the other hand, spells the demise of corporate existence.
- Fund managers should prioritise creating innovative financial products tailored to diverse retail investor needs. Understanding and addressing these needs through schemes with flexibility, liquidity, and risk-adjusted returns is crucial for long-term success.
- Embracing technological advancements and upgrading skills are essential for competitiveness. Continuous research is imperative to stay attuned to evolving investor preferences and market trends, enhancing the overall appeal and performance of mutual fund schemes.

- Fund houses should engage in continuous research to identify the best stocks and understand the market trends and improve their market timing ability.
- The detailed examination of large-cap funds exposes a worrisome trend of underperformance, with only 29% outperforming their benchmarks, deficiencies in both stock selection skills and market timing abilities. A considerable number of these funds demonstrate notable shortcomings in terms of market timing capabilities. Fund managers of large-cap schemes are advised to reassess their strategies, placing a stronger emphasis on alpha generation, and market timing accuracy to enhance overall performance and deliver more satisfactory risk-adjusted returns for investors.
- The analysis of Large & Mid Cap funds highlights a concerning trend as 73% of sampled funds underperformed the market index, despite positive daily returns. The average lag behind the market, coupled with unfavourable Sharpe ratio and Treynor Index comparisons, indicates a need for improved fund selection and performance optimization. Challenges in stock selection and market timing, evident through negative alpha values and model assessments, emphasise the importance of refining these aspects. Fund managers are recommended to intensify efforts in meticulous fund selection, enhance stock picking and timing strategies, and conduct regular performance reviews.
- The T-M and H-M Model test results for different equity funds reveal a low proportion of funds with statistically significant positive market timing coefficients, indicating a lack of success in generating positive market timing outcomes. Many funds, spanning different categories, show significant negative timing coefficients. To enhance market timing and boost returns, Indian mutual fund managers can leverage advanced analytics, machine learning, and AI for precise trend analysis. Implement robust risk management strategies to mitigate the impact of market volatility. Actively monitoring key economic indicators, adopting dynamic asset allocation, and understanding macroeconomic factors are crucial. Scenario planning prepares for diverse market situations, and ongoing training enhances managers' timing skills. Promoting collaboration, communication with investors, and learning from past mistakes contribute to a disciplined approach. While financial markets offer no guarantees, these strategies improve the potential for successful market timing and superior returns.

11.3 Recommendations for Market Regulators

- The study reveals that 50% of mutual funds have underperformed their respective indices, attributable to factors like inadequate fund management, unfavourable market timing. Regulatory bodies must intervene, seeking justifications for continued poor performance, as they are handling investors' hard-earned money.

  Given the vast size of the managed fund industry, it is essential for regulatory agencies to ensure that these funds invest their unit-holders' money effectively. Since even a basis point difference in fund returns implies almost a crore of rupees gain or loss for investors. Stringent measures are essential to protect the interest of inexperienced and new investors. SEBI can also issue guidelines to the AMC's and help them in focussing more on investment research.

- SEBI can also issue guidelines to the AMC's and help them in focussing more on investment research.
- SEBI should introduce performance indicators that can effectively gauge the stock selection and market timing prowess of different Asset Management Companies (AMCs).
- Study reveals that in India, around half of financial assets of retail investors are held in bank deposits, while mutual funds account for less than 9% of total savings. This differs from the trend in the US and other advanced countries, where mutual funds successfully attract a substantial portion of funds from retail investors. To address the low participation of Indian retail investors in mutual funds, it is imperative for SEBI to undertake targeted initiatives. Firstly, an extensive investor awareness campaign should be launched to educate individuals about the benefits and risks associated with mutual funds, highlighting their potential for wealth creation compared to traditional bank deposits. Moreover, simplifying the investment process and reducing regulatory complexities can enhance accessibility for retail investors. SEBI could collaborate with financial institutions and introduce financial literacy programs in schools and colleges to instil basic investment knowledge from an early age. Develop online modules and mobile apps to enhance financial literacy among the general population. Encourage distributors to offer personalised financial advice to retail clients, fostering a better understanding of investment options.

  By implementing these measures, India can encourage a shift from traditional savings to a more diversified and wealth-generating investment landscape, aligning with global trends.

- Promote investor education initiatives to increase financial literacy and awareness about mutual funds. Encourage fund houses to conduct investor education programs and provide easily understandable materials on their websites.
- SEBI and AMFI (Association of Mutual Funds of India) must enhance transparency in the investment policies of mutual funds. AMFI should function as a watch dog, safeguarding the interests of small investors.
- Streamlining taxation is recommended, along with providing retail investors with incentives to channel their funds into mutual funds.
- Mandate the disclosure of commissions earned by intermediaries and tied agents to enhance transparency.
- Implement measures to eliminate and prevent unethical practices within the mutual fund industry. Enforce strict penalties for individuals engaged in deceptive advertising of mutual fund schemes.
- Financial illiteracy is one major weakness in our system. AMFI can play a very crucial role by educating investors and by creating awareness about the different mutual fund products.
- SEBI has indeed undertaken significant efforts in recent years to enhance mutual fund regulation, collaborating with AMFI in various areas. However, there is a need for SEBI to further ensure robust corporate governance and transparency in mutual fund operations to safeguard investor interests. To enhance transparency mutual funds should be encouraged to provide clearer and more easily understandable information about their investment strategies, risks, and expenses. Mandate regular and easily accessible updates on portfolio holdings, performance, and other relevant data to empower investors to make informed decisions. Additionally it is imperative to implement measures that compel funds to provide fair and truthful disclosures to investors. This transparency is essential for subscribers to fully understand the risks associated with their investments in funds.
- Regularly review and update expense ratio regulations to strike a balance between ensuring investors are not overcharged and allowing fund managers to operate sustainably.
- SEBI should rigorously monitor Asset Management Companies (AMCs) to prevent their involvement in speculative activities. Continuous oversight is necessary to maintain the integrity of the mutual fund industry to gain confidence of retail investors.

- Prompt redressal of grievances and timely responses to queries are essential for fostering greater confidence in the retail investor community.
- Establish a periodic review process for existing regulations to ensure they remain relevant and effective in the evolving market landscape. Seek feedback from industry participants, investors, and other stakeholders. It's crucial for any regulatory changes to strike a balance between protecting investors and fostering a conducive environment for the growth and innovation of the mutual fund industry. Additionally, close collaboration with industry participants and continuous monitoring of market dynamics are essential for effective regulation.

12 Scope for further research

The findings of this research open several avenues for future studies, particularly in the

evolving landscape of the mutual fund industry.

- Future research could delve deeper into understanding the factors that influence investor behaviour, particularly the reasons behind the preference for traditional savings methods like bank deposits over mutual funds. Studies could explore psychological, cultural, and economic factors that impact retail participation in mutual funds.
- With the rise of fintech, research could explore the role of technology in mutual fund distribution, including the impact of digital platforms on investor engagement, fund selection, and portfolio management. Studies could also examine how technology can be leveraged to reach underserved segments of the population.
- Future studies could focus on the impact of regulatory changes on the growth and development of the mutual fund industry. This could include analysing the effectiveness of existing regulations in protecting investor interests and promoting industry growth, as well as identifying areas where further regulatory improvements are needed.
- The role of technology, including algorithmic trading and AI-based fund management, is an emerging area of interest. Future research could examine how these advancements impact the performance of mutual funds, particularly in terms of stock selection and market timing.
- Future studies could examine the influence of fund manager expertise, experience, and decision-making processes on the performance of actively managed funds. Understanding

how these factors correlate with outperformance or underperformance could help investors make more informed choices when selecting funds or fund managers.

- Future research could focus on exploring the underlying reasons for the success of certain fund categories that consistently outperform their benchmarks, as well as investigating the factors contributing to the underperformance of other categories. This analysis could help identify key elements like stock selection, market timing, market efficiency, and portfolio management challenges such as fund size, liquidity, management fees and also macroeconomic conditions that influence performance across different segments.
- The current research focuses exclusively on the performance of Equity mutual funds. To broaden the research scope, additional investigations could be carried out concerning other types of mutual funds such as hybrid funds, income funds, gilt funds, fund of funds, liquid funds, and sector-oriented mutual funds, ETFs, Index Funds. By exploring the performance of these funds, a more comprehensive analysis of the Indian mutual fund landscape can be achieved, providing valuable insights into various investment options across different fund categories.
- The current study, spanning a decade, exclusively incorporates mutual fund schemes with continuous data available throughout the entire ten-year period. This led to the exclusion of recently launched schemes due to insufficient data, resulting in a limited number of funds within certain schemes. To enhance the scope of the sample size and obtain deeper insights, a similar study could be conducted within a condensed time frame, potentially spanning three to five years.
- To conduct a comprehensive study of the mutual fund industry, it is imperative to scrutinise the perspectives and challenges faced by all stakeholders involved like investors, fund managers, brokers, commission agents and distributors. Utilising a multifaceted research methodology that combines quantitative and qualitative analyses will enable a more accurate portrayal of the challenges faced by each participant.

13. Conclusion

The Indian mutual funds industry, commencing its journey with the establishment of the Unit Trust of India in 1964, has experienced tremendous growth and expansion over a period of time. This growth is evident in both the increase in Assets Under Management (AUM) and the diversification of product offerings.

The objective of this study is to evaluate the financial performance of open-ended equity mutual funds in India over a ten-year period from April 2012 to March 2022. This study is based on the daily data of NAV of 125 equity mutual funds belonging to 11 different categories of Equity funds, Large-Cap, Large & Mid Cap, Multi-Cap, Small-Cap, Value, ELSS, Contra, Dividend Yield, Focus and Flexi-Cap.

Indian Mutual fund industry is capable enough to generate earnings for their clients. Based on Mean return, all the Actively managed equity funds considered in this study have yielded positive returns surpassing the risk-free rate, and there is also evidence of outperformance within certain equity funds. In terms of Return and Risk adjusted return parameters such as Sharpe Ratio and Treynor Ratio majority of the funds outperformed their respective benchmark indices. The comparative analysis of different categories of equity funds reveals that the small cap and Mid Cap fund category has demonstrated remarkable outperformance in comparison to other fund types. The success of Small-Cap fund in comparison with other categories could be attributed to a broader and more diverse small-cap stock universe. The extensive range of small-cap options allows for better diversification, reducing risks associated with individual stock and sectoral performance. Certain equity categories, such as Large Cap, Large & Mid Cap, have exhibited subpar performance compared to their respective benchmarks.

The examination of risk profiles across different categories emphasises a prevalence of moderate risk, striking a balance between volatility and returns. Diversification emerged as a common strategy across equity-oriented schemes, with a majority of funds prioritising a high degree of diversification in their portfolios, which had saved them from high risk exposures. This aligns with their growth-focused objectives, indicating a strategic approach to risk management.

Indian mutual fund managers demonstrated effective stock selection, evident in significant positive alpha values across diverse equity categories. Furthermore, there are minimal statistically significant negative alpha values, indicating few instances of negative stock selectors. However, when it comes to market timing, the general consensus about market unpredictability holds true in the Indian scenario, revealing a lack of proficiency among Indian fund managers. In the majority of equity mutual fund categories, there is a failure to generate statistically significant positive market timing coefficients, and negative market timing outcomes prevail across various fund categories. This implies a deficiency in timing ability among Indian Equity fund managers. The widespread negative correlation between selectivity and timing indicates challenges faced by fund managers in excelling in both

activities. The study highlights that active management can add value in specific segments, but investors should carefully select funds and consider blending active and passive strategies to optimise returns and manage risks, particularly in underperforming categories. Strong stock selection skills are crucial for generating returns, while market timing remains challenging. Overall, this research offers valuable insights into the performance of equity mutual funds in India, aiding investors, fund managers, financial advisors, and policymakers in making informed decisions.

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